REPORT RESUMES

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PROPOSAL FOR PROGRESS, IOWA COOPERATIVE STUDY OF POST HIGH SCHOOL EDUCATION. FINAL REPORT.

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A 2-YEAR STUDY (1965-67) WAS DESIGNED TO IDENTIFY IOWA'S POST SECONDARY EDUCATION NEEDS, DETERMINE FACILITIES NEEDED, DETERMINE FUNCTIONS FOR EDUCATIONAL INSTITUTIONS, DISCOVER STAFF NEEDS, RECOMMEND MEANS OF COORDINATION AND GOVERNANCE, AND PROPOSE METHODS OF FINANCING POST SECONDARY EDUCATION. CHARACTERISTICS OF AN EFFECTIVE SYSTEM WERE DETERMINED TO BE WIDESPREAD EDUCATIONAL OPPORTUNITY, DIVERSITY OF PROGRAMS AND SERVICES, HIGH QUALITY, ECONOMY OF OPERATION, COORDINATION, AND COOPERATION. THE INVESTIGATORS GAVE ATTENTION TO (1) SOCIOECONOMIC AND DEMOGRAPHIC FACTORS, (2) STUDENT CHARACTERISTICS, (3) ENROLLMENT PROJECTIONS, (4) PROGRAM NEEDS AND PROPOSALS FOR PATTERNS OF POST SECONDARY EDUCATION, (5) FACULTY AND STAFF, (6) EXISTING FACILITIES, (7) COSTS OF CAPITAL IMPROVEMENTS, (8) PATTERNS OF INCOME AND EXPENDITURES, (9) PROJECTIONS OF OPERATING COSTS, AND (10) GOVERNANCE AND COORDINATION. CONSIDERATION WAS GIVEN TO THE OPERATION AND ROLES OF THE PRIVATE COLLEGES AND UNIVERSITIES, THE STATE OPERATED 4-YEAR INSTITUTIONS (UNIVERSITY OF IOWA, IOWA STATE UNIVERSITY, AND STATE COLLEGE OF IOWA), THE AREA VOCATIONAL SCHOOLS, AND THE COMMUNITY COLLEGES. (WO)

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PROPOSAL FOR PROGRESS

ED019957

FINAL REPORT

COOPERATIVE STUDY
OF POST HIGH SCHOOL
EDUCATION

- IOWA ASSOCIATION OF PRIVATE COLLEGES AND UNIVERSITIES
- STATE BOARD OF PUBLIC INSTRUCTION
- STATE BOARD OF REGENTS

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COOPERATIVE STUDY OF POST HIGH SCHOOL EDUCATION
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February 1, 1967

LETTER OF TRANSMITTAL

To The Citizens of Iowa

This is the complete final report of the Iowa Cooperative Study of Post High School Education. It will by no means answer all of the questions which a concerned citizen might have. It is a start in the right direction. The growing complexity of the Post High School Education scene is such that continued study is imperative. Data in this report should be kep up to date and revised as conditions dictate. Long-range planning and continued communication between all phases of Post High School Education is imperative if we are to meet the educational and cultural needs of our youth and adults in Iowa.

This report represents a concensus of the Board of Directors of the study. Board members agree with the major recommendations of the report, but individuals do not necessarily agree with every specific part of it. Members of the Citizens Advisory Committee were provided with information on all parts of the study. They made many valuable criticisms and suggestions. They were not asked to endorse the report as a Committee.

This is no less than the tenth study of higher education in Iowa to be carried out by one or more agencies of state government since 1912. It is perhaps the most comprehensive of all ten studies, involving as it does, the various elements of public and private education at several levels, the financing of such education, the changing needs dictated by the changing Iowa economy, and coordination of the institutions and programs which provide it.

This study was prompted by concern - concern for the changing educational needs of young Iowans (and their parents), concern for the rising costs of education, concern for the division of responsibility and for avoidance of wasteful duplication. Expressed more or less simultaneously within the governing bodies of Iowa's institutions and systems, and by individual educators and legislators, the concern led to the launching, early in 1965, of this Iowa Cooperative Study of Post High School Education, under the joint sponsorship of the State Board of Regents, the State Board of Public Instruction, and the Iowa Association of Private Colleges and Universities. The state's Higher Education Facilities Commission joined in the study shortly after its inception.

As this study goes to press the Iowa Association of Private Colleges, the State Board of Public Instruction, the State Board of Regents, and the Higher Education Facilities Commission are considering a means of organizing whereby meaningful planning and coordination can be implemented so that the Citizens of Iowa will continue to have an up-to-date and complete picture of plans, proposals, and vital information necessary to make intelligent decisions about Post High School Education in Iowa.

As Chairman of the Board of Directors of this study, I want to take this means, on behalf of the Board to express the appreciation of the Board to the over 80 professional staff members in our public and private colleges and universities who contributed their time and professional knowledge to this study. The work of devoted Iowa Citizens who gave their time to contribute to this study made a real difference in the outcomes. To them we offer our most sincere thanks.

J. W. Maucker, Chairman
Board of Directors

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PREFACE

Alfred North Whitehead, in the last chapter of Science and Modern World wrote: "Any special way of looking at things is a myriad of ways of not looking at them." So it is with this report. As one who has been close to every aspect of this study I know I share with my colleagues a real sense of concern about the many other ways there are to approach the study of Post High School Education. We had limited time and budget, but we had the richest of resources in personnel from the Private Colleges and Universities, The Regents Schools, and The State Department of Public Instruction. As this report was organized and as committees worked, we did not have a "single way of seeing things." Yet, we feel that what was not said may be as important as what has been said in this first attempt of Private and Public Education to join forces for the mutual benefit of each other and the State of Iowa.

If the only thing accomplished is proof that all sectors of Higher Education can work together, then the study has been a success. There are many issues and policy questions that deserve continued concern and study by all phases of Post High School Education. Iowa has the kind of leadership necessary in education to continue to search for the best means to serve Iowa youths and adults.

I want to take this opportunity to thank the Board of Directors of this Study, and the Citizens Committee for the many hours of work and guidance which they gave. Chairman J.W. Maucker deserves special acknowledgement for the leadership he provided by his wisdom and insight into the work of the study.

Professor Bradley Sagen, Mr. Larry Jones, Dr. Robert Stephens, and Dr. Burdette Hansen were the major forces in the central office in implementing and organizing this study. These persons plus many others attempted to meet the objectives set forth.

Many questions remain unanswered, and the data in this study should be constantly checked and modified as the situation dictates. Many questions are not answered by data. It is through imagination, creative leadership, and statesmanship based on sound educational philosophy that great programs are built, and state needs are met.

WILLARD R. LANE, Director

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CHAPTER I

INTRODUCTION, CONCLUSIONS, AND RECOMMENDATIONS

Part A - Introduction

The State Board of Regents, the State Board of Public Instruction, and the Iowa Association of Private Colleges and Universities launched the Iowa Cooperative Study of Post High School Education in 1965.

Although five studies had been made since 1950[1], each was limited in scope and predated the recent developments leading to the expansion of vocational-technical education at the post high school level in Iowa. Hence, a more comprehensive analysis to obtain up-to-date information for programming, planning, and developing post high school education in Iowa appeared to be in order.

The term "post high school education" rather than "higher education" was used in the title of the study to indicate clearly that the focus was to be on educational programs and services carried on by the groups cooperating in the study for students beyond high school age, regardless of: 1) the type of institution in which the instruction was offered, 2) whether or not the instruction led to a certificate or a degree, and 3) whether or not it was vocational in nature.

Early in 1965 a Board of Directors was established consisting of three members and the Executive Secretary of the State Board of Regents; the president and a faculty member from each of the Regents institutions; two members representing the State Board of Public Instruction, the State Superintendent of Public Instruction and a superintendent from a junior college district; and two private college presidents and the executive secretary representing the Iowa Association of Private Colleges and Universities. Shortly after the study was initiated, the Higher Education Facilities Commission of Iowa, contemplating a study to gather basic data for the implementation of the Higher Education Facilities Act in Iowa, agreed to participate in the Cooperative Study and to underwrite a portion of its cost. In the summer of 1965 a staff was appointed, the objectives of the study were established by the Board of Directors, and the working committees were named. In the fall of 1965 outlines of each section of the study were approved and the collection of the data was begun.

Purposes of the Study

The Iowa Cooperative Study of Post High School Education was established as a voluntary venture with the following purposes:

1. To estimate the size and characteristics of the population which will be served by post high school educational institutions in Iowa.

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[1] Strayer Survey, 1950; Dowd Report, 1954; Iowa Higher Education Study Committee Reports, 1950-1954; "Education Beyond High School Age and the Community College," State Department of Public Instruction, 1962; Gibson Report, 1960.

2. To identify the post high school educational needs of the citizens and to determine the nature of programs which should be offered within the state to meet the post high school educational needs of its citizens.
3. To determine those areas of research and service which can be most effectively and most efficiently performed by post high school educational institutions.
4. To ascertain, within the resources potentially available, an educationally sound distribution of programs of post high school education, research, and service, among the present and possible future institutions.
5. To determine the facilities needed to accommodate future enrollments and programs in Iowa.
6. To determine the future staff needs of post high school educational institutions in Iowa.
7. To recommend means of coordination and governance for education beyond high school.
8. To propose methods of financing post high school education.

Goals for Iowa Post High School Education

The Board of Directors, staff, and consultant committees were also guided in their research and analysis by several assumptions concerning the goals to be sought in the development of post high school education in Iowa. Although not formalized initially, these basic assumptions did underlie the entire study and were gradually crystallized and defined as goals and as criteria by which present arrangements and proposed changes should be judged.

It was recognized that post high school education must meet the needs of both the individual student and the society which maintains the educational institutions. The overriding goal is thus a dual one: 1) to provide post high school education which will enable individual students to fulfill their potentialities to the highest extent possible and to offer instruction and conduct research, and 2) to provide educational and technical services which will undergird, stimulate, and enrich the economic, civic, and cultural life of the society served.

To achieve this fundamental objective, post high school education should be so designed as to achieve:

1. Widespread Educational Opportunity

   Opportunities must be made available for all students who are seriously interested to pursue post high school education to the limits of their abilities. Achievement of this goal requires the removal of unreasonable geographic, financial, or other discriminatory barriers.

2. Diversity of Programs and Services

   To meet the extremely diverse needs, interests, and abilities of students beyond high school age and to meet the educational needs of an increasingly complex society, programs ranging from those for adults with very little formal education to those for post-doctoral students must be made available.

3. High Quality

Each program or service offered - whether it be a two-week short course of a vocational nature, an adult education offering for general enlightenment, or a graduate program in physics - should be handled by competent instructional personnel working with first-rate instructional materials and equipment. Programs and services must be of high quality in all institutions offering post high school work so that programs requiring different levels of preparation do not reflect different levels of quality.

4. Economy of Operation

Post high school education must be characterized by the efficient use of economic, personal, and institutional resources. This does not mean that post high school education will be inexpensive; on the contrary, many programs and services call for substantial investment. But it does mean that post high school education should be so organized and operated that a high educational return is received by both individuals and society on each dollar invested, which requires careful allocation and use of operating funds and other resources.

5. Coordination and Cooperation

Essential to the accomplishment of the foregoing objectives are coordination and cooperation between and among the various individuals and institutions engaged in post high school education in the state. To achieve smooth transfer of students and wise use of funds calls for coordination of public and private post high school institutions and their wholehearted cooperation with elementary and secondary education and with economic, civic, and cultural groups throughout the state.

Clearly, the above objectives are closely interrelated; the accomplishment of each is dependent to a considerable extent upon the accomplishment of the others. It has been assumed throughout the study that the adequacy of the existing instructional offerings, services, research programs, and other aspects of the post high school educational enterprise in Iowa should be judged in terms of the goals or criteria stated above, and that proposals for modification to improve post high school education in the state should likewise be judged in terms of these criteria.

Procedures Followed in the Study

Functionally, the study was divided into seven major areas. Consultant committees of responsible persons with specialized technical knowledge of each field and broad acquaintance with the problems of the state were established; with the aid of the staff, they defined the scope of the area to be studied and interpreted the data for presentation in the final report. Several of the committees found it necessary to form subcommittees and task force groups to analyze specific topics within their area.

The committees, subcommittees, and task force groups, and their general objectives, were as follows:

Committee A: Population and Enrollment Projections. This committee was charged with the responsibility of projecting population, providing information on the probable concentration of population and population shifts in Iowa, and projecting probable enrollments in post high school education.

Committee B: Student Characteristics. This committee was concerned with the admission and retention of students in post high school education, factors relating to college attendance, and the abilities, aspirations, and expectations of high school graduates seeking post high school education.

Committee C: Post High School Programs and Institutional Functions. This committee was charged with broad responsibility for investigating existing programs in Iowa institutions and the projected plans of the various institutions regarding the direction their programs would take in the future.

A Subcommittee on Articulation explored the relationships and ease of movement from the high school to the graduate school, and among and between the several institutions.

Four task force groups were used by Committee C to investigate specific problems in this area. The task forces worked in areas of Less Than Baccalaureate Degree Level Programs, Undergraduate and Baccalaureate Level Professional Programs, Graduate and Professional Instruction and Research, and Extension and Public Service.

Committee D: Faculty and Staff. This committee was responsible for assessing existing staffing practices, salaries, and fringe benefit programs; projecting future faculty and staff needs; and identifying problems of recruiting and retaining faculty and staff.

Committee E: Facilities. This committee was responsible for determining the ability of the various institutions to accommodate students in existing facilities and estimating the additional facilities needed to house projected enrollments, new programs and functions, and faculty and staff.

Committee F: Economic Development, Manpower, and Financing. The work of this committee was carried on by two subcommittees. The Subcommittee on Economic Development and Manpower provided data on past, present, and future economic trends and manpower needs in Iowa. The Financing Subcommittee was responsible for estimating the costs of post high school education and showing the extent of support needed by public and private, two-year and four-year institutions in Iowa.

Committee G: Coordination and Governance. This committee was charged with the responsibility of identifying the major problems of governing and coordinating the various post high school programs and of identifying possible alternative solutions.

Each consultant committee was additionally responsible for the preparation of a report on its findings.

To advise the Board of Directors and staff at major stages of the study and to assist in taking the results of the study to the public, a Citizens' Advisory Committee, consisting of twenty-four outstanding Iowans interested in furthering post high school education, was formed by the Board of Directors. Each of the committee reports, as well as the final report, was presented in preliminary and final form to the Citizens Advisory Committee for its analysis and reactions.

Limitations of the Study

1. Certain objectives not fully met -

   Most of the purposes set forth for the Study (see page 2) were at least partially met. The educational needs of citizens (Number 2) and methods of financing (Number 8) were not fully explored. The former was found to be beyond the scope of this study; its accomplishment would require a much more comprehensive analysis involving the cooperation of business, industry, and the professions throughout the state. The eighth purpose is met only to the extent that certain strategies for financing capital improvements, private college programs, and the area community colleges are suggested.

2. Development of a Master Plan not intended -

   It should be clearly understood from the outset that the purpose of this study was not to present a Master Plan for post high school education, but rather to analyze the current status and project the needs for post high school education in Iowa. Hopefully, however, the data provided in this report will promote careful and thorough planning by all institutions concerned and a cooperative effort to provide the best possible post high school education.

3. Proprietary institutions not included -

   One segment of post high school education not included in the Iowa Cooperative Study is the private, proprietary, post high school training institution. Although the Board of Directors of the study recognized the important role these institutions have in training the young people of Iowa, their particular problems and concerns were thought to be enough different in nature to prohibit their inclusion in the study. Two colleges, Palmer Junior College and Midwestern College, were not included by virtue of the fact that the base year of the study -- 1964 -- predated their operations.

4. Data incomplete in spots -

   Since individual institutions participated in the study entirely on a voluntary basis, complete data were not obtained in all areas. All institutions participated in the facilities study and in at least one phase of the programs and functions study. Fortunately, total participation was as good as that experienced in similar studies elsewhere.

Table I indicates the extent of participation by each of the post high school institutions in the Iowa Cooperative Study and Figure 1 shows their geographic location.

5. Limited basis for projecting community college trends -

It is necessary to recognize the difficulty in projecting needs, programs, or policies for the new area vocational-technical and area community colleges. Historical data on junior and community colleges operated by single school districts in Iowa in recent years do provide some insight into the problems of public two-year colleges; but the area community colleges and vocational schools which are being created by the newly merged area districts have no historical precedents upon which to base projections.

6. Difficulties in generalizing about private four-year colleges -

Iowa's twenty-nine private colleges and universities vary so greatly in purpose, admissions policies, fees charged, course offerings, size and other characteristics of student bodies and faculties, adequacy of plant, and financial support that great care must be exercised in making and interpreting generalizations concerning "Private Colleges" as a category.

Perhaps the real merit in a comprehensive survey such as the Iowa Cooperative Study rests in the questions it raises rather than in the answers it provides. By no means does this study pretend to offer solutions to all the problems of Iowa post high school education; it should, however, focus attention on the most significant problems and areas of need and provide basic data for future analysis and planning.

TABLE I

PARTICIPATING INSTITUTIONS

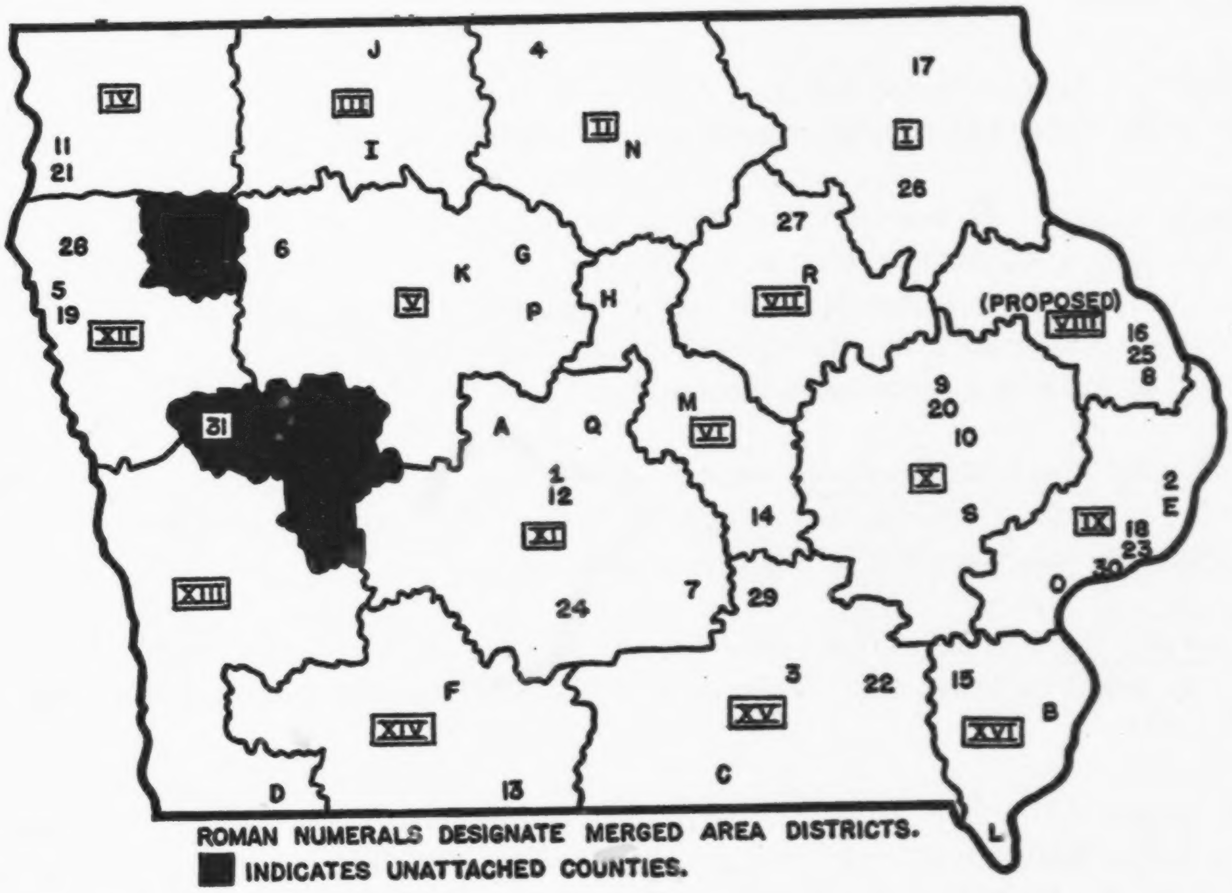
Public Junior and Community Colleges	Student Characteristics	Programs and Functions	Faculty and Staff	Facilities	Finance
A. Boone	X	X		X	
B. Burlington		X		X	X
C. Centerville	X	X	X	X	X
D. Clarinda		X	X	X	X
E. Clinton		X		X	
F. Creston	X	X	X	X	X
G. Eagle Grove	X	X	X	X	X
H. Ellsworth	X	X	X	X	X
I. Emmetsburg		X		X	
J. Estherville	X	X		X	
K. Fort Dodge	X	X	X	X	X
L. Keokuk		X		X	
M. Marshalltown		X		X	X
N. Mason City	X	X	X	X	X
O. Muscatine	X	X	X	X	X
P. Webster City	X	X	X	X	X
Regents Institutions					
Q. Iowa State University	X	X	X	X	X
R. State College of Iowa	X	X	X	X	X
S. The University of Iowa	X	X	X	X	X

TABLE I (Continued)

Private Junior Colleges	Student Characteristics	Programs and Functions	Faculty and Staff	Facilities	Finance
1. Grandview	X	X	X	X	
2. Mount St. Clare	X	X		X	X
3. Ottumwa Heights	X	X		X	
4. Waldorf College	X	X	X	X	X
Private Four-Year Colleges					
5. Briar Cliff	X	X		X	X
6. Buena Vista	X	X	X	X	X
7. Central College	X	X	X	X	X
8. Clarke College	X	X	X	X	X
9. Coe		X		X	X
10. Cornell	X	X	X	X	X
11. Dordt	X	X		X	X
12. Drake	X	X	X	X	X
13. Graceland	X	X	X	X	X
14. Grinnell	X	X	X	X	X
15. Iowa Wesleyan	X	X	X	X	X
16. Loras		X		X	
17. Luther	X	X	X	X	X
18. Marycrest		X		X	X
19. Morningside	X	X	X	X	X
20. Mt. Mercy	X	X	X	X	X
21. Northwestern	X	X	X	X	X
22. Parsons		X		X	
23. St. Ambrose		X	X	X	X
24. Simpson	X	X	X	X	X
25. University of Dubuque	X	X	X	X	X
26. Upper Iowa		X	X	X	X
27. Wartburg	X	X	X	X	X
28. Westmar		X		X	
29. William Penn	X	X	X	X	X

Figure 1

POST HIGH SCHOOL INSTITUTIONS AND AREAS—1966



ROMAN NUMERALS DESIGNATE MERGED AREA DISTRICTS.

■ INDICATES UNATTACHED COUNTIES.

Private Junior Colleges

1. Grandview, Des Moines
2. Mount St. Clare, Clinton
3. Ottumwa Heights, Ottumwa
4. Waldorf College, Forest City
30. Palmer Junior College, Davenport

Private Four-Year Colleges

5. Briar Cliff, Sioux City
6. Buena Vista, Storm Lake
7. Central College, Pella
8. Clarke College, Dubuque
9. Coe, Cedar Rapids
10. Cornell, Mount Vernon
11. Dordt, Sioux Center
12. Drake, Des Moines
13. Graceland, Lamoni
14. Grinnell, Grinnell
15. Iowa Wesleyan, Mount Pleasant
16. Loras, Dubuque
17. Luther, Decorah
18. Marycrest Davenport
19. Morningside, Sioux City
20. Mt. Mercy, Cedar Rapids
21. Northwestern, Orange City
22. Parsons, Fairfield
23. St. Ambrose, Davenport
24. Simpson, Indianola
25. University of Dubuque, Dubuque
26. Upper Iowa, Fayette
27. Wartburg, Waverly
28. Westmar, Le Mars
29. William Penn, Oskaloosa
31. Midwestern, Denison

Public Junior and Community Colleges

A. Boone
B. Burlington
C. Centerville
D. Clarinda
E. Clinton
F. Creston
G. Eagle Grove
H. Ellsworth, Iowa Falls
I. Emmetsburg
J. Estherville
K. Fort Dodge
L. Keokuk
M. Marshalltown
N. Mason City
O. Muscatine
P. Webster City

Regents Institutions

Q. Iowa State University, Ames
R. State College of Iowa, Cedar Falls
S. The University of Iowa, Iowa City

Definitions of Terms

Post High School Education: All programs offered in the participating institutions for individuals beyond high school age, including courses and programs not carrying degree credit.

Junior College: An institution offering two years of academic work transferable to four-year institutions and limited vocational, technical, or occupational curricula.

Community College: An institution offering academic work transferable to four-year institutions, vocational-technical programs for those seeking immediate employment, adult and continuing education (including vocational retraining), and public services including conferences, workshops, and cultural events. The Area Community College in Iowa is a community college operated by a merged area district.

Area Vocational-Technical School: An institution operated by a merged area district offering extensive vocational, technical, and occupational training programs, but no programs carrying baccalaureate degree credit.

Regents Institutions: (Public four-year institutions) Iowa State University, State College of Iowa, and The University of Iowa, which are under the control of the State Board of Regents.

Private Colleges and Universities: Non-profit colleges and Universities (two-year or four-year) supported primarily by non-tax funds and controlled by an independent agency or board. Proprietary institutions, although private, are not included in the term as used in this Study.

NOTE: The specific institutions participating in the study are shown on pages 7 and 8.

Part B

Major Findings and Recommendations

This portion of the chapter attempts to indicate in condensed form the major findings and recommendations which may be of interest and concern to the people of Iowa. Supporting details are found in subsequent chapters.

The Iowa Economy

General Conditions

Judging by income and employment indices, Iowa is making a very successful transition from an agricultural to an agricultural-business-industrial economy. The Iowa unemployment rate in 1965 (2.2 per cent of the labor force) was approximately one-half of the national average; and Iowa personal income reached record highs in 1965. While the Iowa economy is now strong and its rate of growth in 1965 was slightly above the national average, it is too soon to tell whether or not the state will be able to sustain its recent rates of economic growth. Per capita income in Iowa is somewhat below the national average (it was approximately 6 per cent below the national average in 1963). It is estimated by the National Planning Association that in the 1970's Iowa will roughly parallel the national average in rate of growth of personal income (both total and per capita).

Projected Employment Trends

Iowa, like other agricultural states, will continue to experience a decline in farm jobs. Upward trends are expected to continue, however, in the service-related industries of communications, utilities, finance, insurance, real estate, government, and professional services. The greatest increase by 1970 in service-related employment is expected to be in "professional services," where 20,000 men will be needed by 1970. The most rapid growth in terms of absolute increase is projected for manufacturing - especially manufacturing related to agriculture - where an additional 38,000 men will be needed by 1970.

Between 1940 and 1960, the growth in the number of employed persons in Iowa was almost entirely the result of an influx of women into the world of work (total employment grew 156,000 of which 138,000 were women). The number of women in "professional services" is expected to increase by 50 per cent from 1960 to 1970, reaching more than 129,000 by 1970. Similar employment opportunities for women are projected in manufacturing and other areas.

In general, employment opportunities requiring technical and professional skills are expected to increase and unskilled labor and agricultural employment are predicted to continue to decrease.

Implications for Planning of Post High School Education

1. Iowa's economic system may be expected to generate sufficient income to enable the state to support strong post high school education if it wishes to do so. It should be recognized, however, that Iowa will have to invest a greater than average proportion of its income in education if, in competition with more wealthy states, Iowa is to compete

successfully for the talent necessary to maintain post high school education institutions of high quality. This Iowa has done in recent years (and could afford to do because the state does not have as severe social problems as do many more urbanized states); this Iowa can and should continue to do in the next fifteen years.

2. It is imperative that Iowa's system of post high school education be so planned as to meet the employment needs of the citizens and, at the same time, strengthen the state's economy through provision of post high school educational programs which will enable the work force to develop and continually update its technical and professional skills. This calls for expansion of facilities providing vocational and technical education; likewise, the rapid shift from agricultural to non-agricultural pursuits implies an expanded need for retraining programs to facilitate occupational transfer and adjustment.

3. Data are not available to indicate exact numbers of persons needed in specific occupations, but it appears clear that there is increased need for greater diversity of educational programs to develop varied skills and talents, ranging from the qualifications required for the semi-skilled worker (which may be developed in a relatively short training period of a year or less) to that of the professional specialists whose preparation may require seven or more years beyond high school.

4. A state agency should be given responsibility for continuous compilation of manpower, employment, and job classification data which will provide a reliable basis for future planning by the boards responsible for education.

Iowa Population Patterns

The total population of the state will continue to grow at a slow rate from the present population of approximately 2,790,000 to approximately 2,900,000 by 1980. Females will continue to outnumber males. A significant proportion of Iowa's population is expected to be made up of young people. The proportion of the population under 30 years of age is expected to increase from 50 per cent in 1960 (actual) to 54 per cent in 1980. The 30-59 age group will decline from 34 per cent in 1960 (actual) to 29 per cent in 1980, and the 60-and-over age group will increase slightly from 16 per cent in 1960 (actual) to 17 per cent in 1980. The increase in population under 30 is particularly significant, since 95 per cent of student enrollment in post high school institutions comes from this age group.[2]

Of particular interest is the 18-21-year-old age group which comprises 67.7 per cent of college enrollment in the nation generally.[3] In Iowa, the 18-21-year-olds are expected to increase from 137,196 in 1960 to 187,414 in 1980 - an increase of more than 50,000. This age group accounts for about 38 per cent of the total population increase from 1960 to 1980. It is significant also that, while Iowa is growing most rapidly in the "under 30" age group, it is also losing the greatest number of people through out-migration from that age group. Most of this out-migration takes place between the ages of 20 and 30.

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[2] Allan Cartter and Robert Farrell, "Higher Education in the Last Third of the Century," Educational Record, Spring, 1965.

[3] Ibid.

While the population of Iowa has stabilized in a slow growth rate since 1900, such has not been the case for individual counties. More than half, fifty-eight, of the state's counties lost population during the 1950-60 period. In contrast, the counties in and around seven metropolitan complexes grew over 10 per cent. (The Standard Metropolitan Statistical Area is the area around and including a central city of 50, 000 or more.) Of particular importance for the planning of post high school education is the estimate that by 1980 Iowa will have approximately 50 per cent of its population concentrated in eight or ten Standard Metropolitan Areas, while the other 50 per cent of its population will be scattered over the state.

Educational Implications of Population Patterns

The following implications for post high school educational planning are suggested by the data on population growth and shifts within the state.

1. While the total Iowa population is not growing rapidly, the age group which forms the base for post high school education is growing rapidly and represents a major portion of the total population. Hence, enrollments may be expected to increase appreciably in the years immediately ahead. Furthermore, as new institutions and programs are made available, it is reasonable to assume that a greater proportion of young people in the 18-21-year-old age group will take advantage of post high school opportunities, increasing enrollment still further.

2. By 1980 approximately one-half of the Iowa population will be in metropolitan areas and one-half will be found in relatively sparsely settled rural areas. Thus, the state should certainly develop, as have the more highly populated states, institutions to serve the centers where population will be most highly concentrated, but such institutions alone will not suffice; the state must also include in its "system" provisions for making educational opportunities available to the 50 per cent of the population living in the more rural areas. A significant portion of the total system of post high school education should therefore be widely distributed throughout the state.

3. Recognition in post high school planning should be given to the large number of females in the Iowa population and work force.

4. The concentration of Iowa's population in metropolitan centers along its eastern and western borders suggests the desirability of exploring cooperative arrangements with neighboring states in providing some phases of post high school education.

The Post High School Student

The expansion of post high school educational programs has extended post high school opportunities to people of all ages, although the major proportion of students still enter upon graduation from high school. In Iowa in 1964-65, 58 per cent of the high school graduates were found to continue their training after high school, with 45 per cent enrolling in a two-year or four-year institution and 9 per cent in a business or technical school. An even greater number of Iowa high school seniors aspired to post high school training. Ninety four per cent indicated aspirations for post high school training and 61 per cent wanted to enroll in two-year or four-year college programs. Hence, it can be assumed that not all of the high school graduates seeking post high school training are attaining their desires.

Aspirations-Expectations

An examination of factors which might limit the realization of post high school aspirations suggests that the greatest discrepancy is for children from lower and middle socio-economic level families. Little difference exists in the aspirations of high school seniors from upper, middle, and lower income families for some type of post high school training, but a significant difference is found in the expectation of fulfillment of those aspirations in the middle and lower income groups. Aspiration for two-year or four-year college training, as contrasted with vocational-technical or other training, is considerably greater for students from upper income families than for students from middle and lower families, and the difference between aspiration and expectation is again greater in the middle and lower income groups than for students from the upper income families. It is assumed in this study that qualified students, regardless of socio-economic background, should have an opportunity to attain the post high school training they desire.

Student Migration

Almost three-fourths (74.2 per cent) of all Iowa students attending two-year or four-year colleges and universities anywhere are enrolled in Iowa institutions. Iowa students who left Iowa to attend college (both undergraduate and graduate) migrated in greatest numbers to the Plains States, and it is clear that greater proportions of "First Professional Students" (38.4 per cent) and "Graduate Students" (41.1 per cent) leave Iowa for their training than do undergraduates (24.0 per cent).

	Iowa Students Enrolled					Source of Students in Iowa Institutions				
	In Iowa		Out of Iowa			Iowans		Non-Iowans		
	No.	%	No.	%	Total	No.	%	No.	%	Total
Total All Students	44,311	74.2	15,424	25.8	59,735	44,311	66.8	22,032	33.2	66,343
Public	26,448	75.9	8,419	24.1	34,867	26,448	76.8	7,974	23.2	34,422
Private	17,863	71.8	7,005	28.2	24,868	17,863	56.0	14,058	44.0	31,921
Under-graduates	40,254	76.0	12,697	24.0	52,951	40,254	69.2	17,923	30.8	58,177
1st Professional	1,375	61.6	845	38.4	2,202	1,357	59.1	941	40.9	2,298
Graduate	2,700	58.9	1,882	41.1	4,582	2,700	46.1	3,168	53.9	5,868

Source: "Residence and Migration of College Students," U.S. Office of Education, Washington, D.C., 1963.

Iowa attracts more students from other states than it sends to other states, drawing mostly from the Great Lakes region and, particularly at the graduate level, from the east coast and foreign countries. As a result, non-Iowans represent one-third of the total college enrollment in Iowa -- 23 per cent of public college enrollments, 44 per cent of private college enrollments, 30 per cent of undergraduate enrollments, and 54 per cent of graduate enrollments.

In general, movement of students across state lines is a good thing; student migration data appear to pose no great problem, with the possible exception that migration of students from southern and western Iowa to public institutions in Missouri, Nebraska, and the Dakotas may reflect the limited number of Iowa institutions in those areas.

Choice of College

The type of institution attended appears to be influenced by several factors. Students in all types of institutions vary widely in ability, family background, and income. In general, however, the student bodies of public two-year colleges contain a relatively large proportion of students from the immediate vicinity of the institution, from families with limited college background, and from lower income groups. Four-year institutions tend to attract student bodies from greater distances, with wider ability ranges, and from a wider range of educational and economic backgrounds. Great variation is found among private colleges in Iowa with respect to the achievement levels and socio-economic status of the students they enroll.

Student Retention

Regardless of the average ability of students admitted to Iowa's two-year and four-year colleges in the fall of 1960, only about one-half graduated from the institution they first entered. In four-year institutions most students who left the institution did so before the junior year, some, no doubt, to continue their education elsewhere. Approximately one-half of Iowa's students entering two-year colleges eventually transferred to four-year institutions. Even though Iowa's pattern of student retention is similar to that of the nation as a whole, efforts should be made to improve the transfer of students between high school and college and between the two-year colleges and four-year college.

Student Mix

The expected increase in enrollments in Iowa colleges and universities during the next few years is inevitably going to include a large number of students who have not been heavily represented in the past-students of less than average academic achievement, from families of less than average income and educational background, with more than average interest in vocational education. These facts have strong implications for the types of programs to be provided, especially in the community colleges, and for the obligation of the state to make such education available to these students on terms they can meet.

Enrollment Projections

For the first time in Iowa an attempt has been made to coordinate and combine enrollment projections for all public and private two-year and four-year institutions. Enrollment projections provide vital information without which meaningful planning is practically impossible. It is extremely important that each of the segments of post high school education know the enrollment expectations and aspirations of the other. One of the most important recommendations of this study, therefore, is that definite provisions be made to provide for the systematic collection of enrollment data and for a regular up-dating of enrollment projections for all post high school institutions, and that such data be made available to all agencies involved in educational planning.

In making the enrollment projections for private two-year and public and private four-year institutions, historical trends were used with modifications to recognize possible changes in future enrollment patterns. Projections for the public two-year institutions could not be based so substantially on historical data since the impact of the new area community colleges, with their strong emphasis on vocational-technical programs, may reasonably be expected to result in new enrollment patterns in these institutions.

The enrollment estimates reported below represent projections of the general trends most clearly discernible in 1966, and thus represent the most reasonable basis available for planning post high school education in Iowa in the years just ahead. They may of course prove quite inaccurate if substantial changes are made in public policies or in the plans of private colleges in the next few years.

TOTAL ENROLLMENT PROJECTIONS
BY TYPE OF INSTITUTION, 1970, 75, 80(1)

		Enrollment					
		Public Two-Year					
Year	Total Enrollment	Total	Degree Credit	Vocational Technical	Private Two-Year	Regents	Private Four-Year
1965	86,448(2)	10,738	9,238(4)	1,500(3)	2,794	36,770	35,838
				Projected			
1970	122,800	21,300	16,300	5,000	3,400	50,900	47,200
1975	152,000	34,000	24,000	10,000	3,600	59,500	54,900
1980	175,200	42,200	27,200	15,000	3,900	68,000	61,100
Per cent increase (1965-1980)	103%	293%	194%	900%	40%	85%	70%

1. Enrollment projections by type of institution have been rounded to the nearest 100.
2. Includes College of Osteopathic Medicine and Surgery (Des Moines) enrollments of 308 in 1965 but not included in sub-totals.
3. No vocational-technical programs were under area control in 1965 and many were not associated with junior colleges.
4. Includes some technical programs which carry transfer credit.

Community College Enrollment

Since the state has adopted a policy of developing a strong community college system, it is estimated that the public two-year colleges will be the fastest growing institutions in the state, quadrupling their total enrollments between 1965 and 1980. Their rate of growth will depend in part upon the speed with which these colleges can be organized, the care with which priorities are established to meet needs in strategic geographic areas, and whether these colleges do in fact develop programs which are diverse enough to be attractive to a wide variety of students.

In addition to the above projections based on students pursuing a program for a semester or more, it is not unreasonable to estimate that 50, 000 to 100, 000 adults will take part in adult education programs of various kinds each year in these schools.

The Private Two-Year Colleges

Enrollment projections for this relatively small segment of Iowa's "system" of post high school education are particularly difficult to make on a reliable basis because the addition of a single college or the move of one institution from the two-year to the four-year category has a substantial effect on the total picture. Private two-year colleges are projected to have an increase of 1, 100 students by 1980 -- approximately 40 per cent over 1965.

The Private Four-Year Colleges and Universities

The enrollments projected for private colleges in this study contrast sharply with projections made in other states, where private college enrollments are generally expected to level off in the next few years so that the private colleges assume a substantially reduced role in providing post high school education within these states. In Iowa the private colleges are expected to continue to be a major segment. In view of the Iowa tradition, these projections for Iowa private colleges appear reasonable provided the private colleges: 1) secure the necessary financial support, 2) recruit vigorously from community colleges and high schools in Iowa, and 3) continue to recruit extensively out of state.

It is projected that these colleges will have an enrollment increase of 70 per cent between 1965 and 1980.

The Regents Institutions

These institutions are projected to grow 85 per cent between 1965 and 1980. It should be noted that this group is expected to include sizable numbers of students in specialized, costly graduate and advanced professional programs. Here, also, an extremely large enrollment in non-credit, adult education courses may be anticipated.

Summary

If the above enrollment projections hold true, enrollments in post high school institutions in Iowa will double by 1980, and the distribution of students by type of college in 1980 will be approximately 24 per cent in public two-year institutions, 39 per cent in Regents institutions, and 37 per cent in private institutions. Likewise, the enrollment of Iowa students in Iowa colleges will also double by 1980 and, if present trends continue, the distribution of Iowa students by type of college in 1980 will be approximately 34 per cent in public two-year institutions, 44 per cent in Regents institutions, and 22 per cent in private institutions.

Educational Programs and Institutional Functions

Iowa Faces a Dual Task

Iowa faces a dual task of expanding educational opportunity to serve more youth and adults and advancing the quality of post high school education at the same time. This requires careful planning and cooperation between the major segments of post high school education.

Major Recommendations

To accomplish the objectives agreed upon for post high school education in Iowa, the following major recommendations are made:

I. Continue the Development of a System of Comprehensive Community Colleges

A. The State Board of Public Instruction has already approved (as of December 1, 1966) fifteen area districts for community colleges and vocational-technical schools (see p. 9). It is generally agreed that major emphasis should be given in the next few years to the development of vocational and technical education in these area districts. However, it is through development of a community college system in its most comprehensive form that Iowa citizens can best be served in the long run, through provision of vocational and technical courses, general education courses, and a wide variety of adult education and retraining programs, as well as pre-professional and liberal arts work from which students may transfer to four-year institutions. It is intended that the comprehensive community college should be open to all, with programs available to meet the great variety of interests, talents, abilities, and personal needs of those enrolled.

B. Careful planning and evaluation by the area boards and the State Board of Public Instruction will be needed to insure that community colleges are strategically located to provide reasonable access for the greatest number of people. Each community college should be large enough to insure a rich curricular offering in liberal studies, pre-professional programs, and vocational and technical programs. (Many authorities in the field set the minimum size for community colleges at 1, 200 full-time students, with 1, 500 to 1, 800 considered more desirable.) Because of sparsity of population in some areas, however, a few community colleges may not reach this optimum minimum size. Certain of these, indeed, may be in areas with such limited taxable resources that special state support will be needed.

II. Continue the Centralization of Upper-Level Undergraduate and Graduate Programs in the Three Regents Institutions

A. The state should not establish a system of four-year regional colleges in the state, as many Midwest states did more than fifty years ago. At this point in time it would appear that the three existing Regents institutions, combined with a strong community college system, offer the best means to provide public post high school education in the state. It would be helpful, however, if the State Board of Regents would develop more specific plans than it has to date for the growth of the Regents system. If these institutions will not be able to handle the full enrollment projected herein, or if actual enrollments in the Regents institutions exceed those projected by this study, or if other conditions change significantly in ways not now foreseen, it may be feasible for the State Board of Regents to recommend the establishment of a fourth Regents institution to serve the state generally, as do the three existing Regents institutions.

B. This study supports the action of the Regents to make the State College of Iowa a university. Such action should provide a greater diversity in graduate programs and upper-level undergraduate programs for the state.

C. The Regents institutions should offer programs at less than the baccalaureate degree level only in areas where the resources of the community colleges are inadequate to provide the services and where Regents institutions possess the unique resources, both physical and human, that make possible the development of unique programs.

D. The Regents are urged to investigate the need for, and the feasibility of, establishing a wider offering of degree programs in the upper-level and graduate years.

Note: The reference to "upper-level undergraduate and graduate programs" in this set of recommendations is not meant to imply that there would be no freshman and sophomore students in the Regents institutions, but rather that the growth in enrollment of these institutions after the community college system gets fairly well established is likely to be primarily in the junior and senior years and in the advanced professional and graduate programs.

III. Maintain and Advance Vigorous Research Programs to Enhance Advanced Instruction, Help Solve the Problems of Iowa Citizens, and Contribute to the General Advancement of Knowledge

A. The basic justification for an extensive investment in research lies in the social improvement, cultural development, and economic expansion, which occurs as new knowledge is incorporated into the life of the people of the state. Research may be designed to solve immediate problems such as finding the causes of specific human and animal diseases, or it may be more basic in character with applications to specific problems occuring somewhat later. Participation in research is one of the primary methods of instruction at the advanced graduate level. While not all persons with advanced graduate degrees will engage in research, training in the methods of scholarship is essential to many professional activities.

B. Universities in their support of faculty research and the training of research scholars are the primary institutions in our society charged with the task of producing new knowledge. Although much research is supported by federal and foundation grants, state funds must be invested in capable faculty and adequate facilities in order to secure outside funds for specific research projects. State funds must be provided also for research centered on Iowa problems in all areas of concern.

IV. Provide for a Better Geographical Distribution of Extension and Other Public Services

A. Iowa has been fortunate in having statewide extension services available for many years in agriculture, home economics, engineering, and professional consultation for the public schools. Further, under Title I of the Higher Education Act of 1965 (Community Development) and the Technical Services Act of 1964, a statewide Extension Council, with advisory councils representing the total public, is planning and working to meet the needs of the state. The Council should be encouraged through provision of state funds to match available federal grants. But the needs are not limited to those which can be met by present federally subsidized programs. Therefore, it is recommended that a significant increase in state expenditures be made to support more effectively a wide variety of extension and public services, with the understanding that geographical distribution of these activities be given a high priority.

B. This study reveals that western Iowa, especially southwest Iowa, is not served as fully as other areas of the state in certain of the off-campus activities of the Regents institutions or by the private colleges and universities. In cooperation with the community colleges, the Regents institutions and interested private colleges and universities can and should make available to all parts of the state a rich program of off-campus activities, including extension classes, consultant services, and cultural programs.

C. Development of a statewide educational television network would hasten the achievement of many goals inherent in an effective extension and public service program and strengthen the on-campus programs at the same time.

V. Maintain and Advance the Present Private Colleges as a Viable Alternative to Public Education and for Significant Numbers of Iowa Youth

A. The first and most crucial requirement for maintenance of a vigorous private college segment in Iowa post high school education is a substantial increase in financial support by private donors. All segments of Iowa post high school education should join in making private college needs known to the public.

B. The various religious denominations and other groups supporting private colleges in Iowa should carefully examine their commitment to higher education to ascertain whether they are adequately supporting these institutions in view of expanding enrollments and rising costs.

C. Some private colleges are considering the introduction of new graduate programs in the state. While it is acknowledged that a diversity of graduate programs is desirable, it does not seem amiss to urge extreme caution in the initiation of graduate work because such programs require expensive additions to faculties, classrooms, and library and research facilities.

D. Interested private colleges are encouraged to participate in the statewide development of extension and public service activities.

Caution

Implementation of the foregoing recommendations would provide a significantly expanded program of opportunities for Iowa youth and adults. Recognizing the dual nature of the task mentioned in the introduction to this section of the report, however, a word of caution is in order. Expansion of the system should not be achieved at the sacrifice of existing quality of education, research, and service. In fact, careful planning is essential to assure that quality is improved at all levels to keep Iowa moving ahead in the next fifteen years.

Faculty and Staff

Numbers of additional faculty members needed to staff the expanded system of post high school education as contemplated in this study are presented in the following summary tables:

Regents Institutions

1965	2, 110	
1960	2, 900	85 per cent
1975	3, 400	increase,
1980	3, 900	1965-1980

Private Four-Year Colleges

1965	1, 439	
1960	1, 900	74 per cent
1975	2, 200	increase,
1980	2, 500	1965-1980

Community Colleges

1965	314	
1970	620	292 per cent
1975	1, 000	increase,
1980	1, 230	1965-1980

Two-Year Private Colleges

1965	112	
1960	140	43 per cent
1975	150	increase,
1980	160	1965-1980

The above estimates are straight-line projections based on existing faculty-student ratios and hence are extremely conservative in light of the new educational programs and new functions proposed in this report. In addition to the faculty projections, it is estimated that a nonacademic supporting staff (clerical, skilled, professional) of 14,000 to 15,000 will be needed by 1980 -- about double the number employed in 1965.

Regents institutions tend to be reasonably competitive on salary and fringe benefits, when compared with similar institutions, and it is imperative that they remain competitive. The private colleges and the community colleges are not sufficiently competitive in salaries and fringe benefits.

The foregoing data concerning numbers of faculty and staff needed in the next fifteen years should not be permitted to draw attention from the fact that the quality of teaching and research personnel is the most important single factor in determining the quality of an educational institution. Most of the Iowa colleges are now below national averages for similar institutions in the number of faculty members with doctor's degrees (or the equivalent). Although the doctorate degree does not in itself guarantee faculty competence, it does represent training considered essential for top-level instructional and research personnel. Hence, specific goals for each type of institution are suggested herein.

Selected Recommendations

1. Recognizing the paramount importance of having well-qualified faculty who are in touch with the rapid developments in their fields of knowledge, it is imperative that institutions provide means for faculty improvement through leaves of absence, time for research, encouragement of participation in professional associations in the various disciplines, and the exchange of faculty between institutions.

2. It is recommended specifically that recruitment programs be established by each segment of Iowa post high school education so that by 1975 the proportion of faculty with doctoral degrees (or the equivalent) will fall within the following ranges: 65-75 per cent in the Regents institutions, 50-60 per cent in the private colleges, and 8-12 per cent in the community colleges.

3. Plans should be implemented immediately for the development and expansion of programs in Regents institutions to prepare faculty members needed in vocational, technical, and occupational education.

4. Every effort should be made to increase salaries and fringe benefits in all institutions to equal or exceed the national averages for similar, competing institutions.

5. Suitable policies related to tenure, promotion, and faculty participation in academic policy-making should be initiated and developed in those colleges not now having such provisions.

Physical Facilities

Existing Facilities

A detailed analysis of physical facilities, made with the assistance of the staff of the Iowa Higher Education Facilities Commission, revealed the following:

1. The Iowa colleges have a great deal of obsolete space, much of which is in such poor condition that rehabilitation would approach the cost of new space without providing fully satisfactory facilities. The Regents institutions and the community colleges have disproportionate amounts of such obsolete space.
2. In addition to a lack of classroom, laboratory, and library space, there is a serious lack of faculty office space in all institutions and of research space in Regents and private institutions.
3. Indices of space utilization (based on the number of square feet provided per student clock hour) in both public and private institutions exceed national and regional averages for similar institutions.

Recommendations

1. Provisions should be made for systematic gathering of data on, and the evaluation of long-range needs for post high school facilities in Iowa.
2. Both public and private institutions should make better utilization of space in late afternoons and on Saturdays.
3. Air conditioning of buildings would facilitate fuller utilization of facilities during the summer.
4. When institutions estimate their long-range building needs in the future, more allowance should be made for building depreciation and obsolescence than has been true in the past.

Projection of Capital Needs

Long-term planning includes the provision of new space for additional enrollment and the rehabilitation and replacement of obsolete space. It should provide for educationally sound buildings, good landscaping, and a safe, healthy, stimulating environment. Provisions should be made for offices and research space as well as for classrooms and laboratories.

Public Institutions

The following capital needs are projected for Regents institutions based on space standards presented in the text of this report. It should be remembered that these estimates assume a 3 per cent per year increase in building costs.

Regents Capital Needs*

	1965-66 through 1970-71	1971-72 through 1975-76	1976-77 through 1980-81	Total
Non-Residential Facilities				
a. Replacement of Obsolete Space	$ 52,031,000	$ 39,208,000	$ 53,555,000	$144,794,000
b. Projected new space to accommodate new enrollment	95,143,000	65,288,000	76,987,000	237,418,000
TOTAL	147,174,000	104,496,000	130,542,000	382,212,000
Residential Facilities	70,579,000	24,516,000	33,097,000	128,192,000
GRAND TOTAL ALL SPACE	$217,753,000	$129,012,000	$163,639,000	$510,404,000

*Excludes hospital, agricultural experiment station

Community college capital needs are projected as follows, based on the assumptions mentioned in the text.

Community College Capital Needs
(Excludes Dormitory)

	1965-66 through 1970-71	1971-72 through 1975-76	1976-77 through 1980-81	Total
Total Cost Non-Residential Facilities	$ 76,612,000	$ 82,802,000	$ 78,220,000	$237,634,000

The following figures indicate the dollar amounts needed for facilities for the public institutions, both community college and Regents institutions.

Capital Needs for Public Two-Year and Four-Year Institutions
(Non-Residential Facilities Only)

	1965-66 through 1970-71	1971-72 through 1975-76	1976-77 through 1980-81	Total
Regents $	$147,174,000	$104,496,000	$130,542,000	$382,212,000
Community Colleges	76,612,000	82,802,000	78,220,000	237,634,000
TOTAL NON-RESIDENTIAL	$223,786,000	$187,298,000	$208,762,000	$619,846,000

The total amounts needed by the publicly supported institutions will come to over a half-billion dollars (not including dormitories, hospitals, and numerous other ancillary facilities) if the projected enrollments and programs are to become a reality. The amounts needed would be about one-fifth less than the figures reported in the above tables if it were assumed that building costs would remain at 1966 levels.

It seems safe to estimate that from 25 to 30 per cent of the capital needs of the Regents Institutions may be met by funds from federal and other sources, depending in large part on the kinds of facilities built, with about 70 to 75 per cent coming from the state.

For the community colleges, from 20 to 28 per cent of capital needs might come from federal sources. If the areas in which the new community colleges are located were to use only the approved three-fourths of a mill tax levy for capital needs, the yield would be about $4,300,000 toward buildings every five years. Area districts, however, are not restricted to this tax levy alone, and may, if they choose, vote a bond issue to be repaid from property taxes in the same manner as a local school system. It is recommended, however, that the financing of the basic capital needs of these colleges beyond the amounts provided by a three-fourths mill levy, be from state and federal sources.

In order to keep pace with the capital needs between now and 1980, it seems logical that some means of financing capital facilities at the state level in addition to the present "pay as you go" method is needed. It is strongly recommended, therefore, that a bonding program be established to allow funding and building of facilities on a systematic basis as needed. The arguments for a state bonding program, which have been advanced recently by the State Board of Regents, are as follows:

1. It spreads the financial burden between present and future generations who will use the facilities.
2. Assuming a 3 per cent annual increase in building costs, bonding and interest costs are in part offset by building in periods of lower costs and paying over a period of time.
3. Bonding provides a means of building at times when the legislature cannot see its way clear to make direct appropriations from existing revenues. It may thus be used to fill in the gaps and keep a systematic building program going.

Private Colleges and Universities

Private colleges and universities face instructional facility needs similar to those faced by public institutions. The following are the projected needs based on space standards discussed in this report (again, a 3 per cent annual increase in building costs is assumed).

Private Four-Year College Capital Needs

	1965-66 through 1970-71	1971-72 through 1975-76	1976-77 through 1980-81	Total
Private Four-Year Colleges Academic and Related Space				
a. Replacement of Obsolete Space	$ 27,669,000	$ 27,335,000	$ 37,120,000	$ 92,124,000
b. Projected New Space	58,014,000	44,086,000	42,402,000	144,502,000
TOTAL	85,683,000	71,421,000	79,522,000	236,626,000
Residential Facilities	60,309,000	23,763,000	31,159,000	115,231,000
TOTAL COST ALL SPACE PRIVATE FOUR-YEAR	$145,992,000	$ 95,184,000	$110,681,000	$351,857,000

Private Two-Year College Capital Needs

TOTAL COST NON-RESIDENTIAL FACILITIES	$ 12,934,000	$ 3,173,000	$ 4,051,000	$ 20,158,000

During the recent past (1960-65) the private colleges received only 1.8 per cent of their capital funds from a governmental source (federal), while the balance was financed through non-government revenue bonds (41 per cent), endowments, gifts, and grants (40 per cent), current funds (3 per cent), and other sources (11 per cent). In the period to 1980, private colleges will undoubtedly be forced to rely on more governmental funds to build at the rate needed.

Operational Expenditures and Income

Comparison of Iowa Institutions with National Patterns

The Regents institutions are similar to their counterparts in the nation with regard to the proportion of income received from student tuition and fees and from governmental appropriations. In regard to expenditures, the Regents institutions are similar to their national counterparts in proportions devoted to instruction and departmental research, library programs, and organized research. They are lower in the proportion of funds expended on extension services.

Private colleges in Iowa are similar to their counterparts in the nation in placing a heavy reliance on student fees and tuition for educational and general income. The private colleges are similar to their national counterparts in regard to proportions of expenditures for instruction and departmental research and for library programs.

The community colleges in the recent past in Iowa have relied on student fees and local property tax for income to a greater extent than their national counterparts. With the new structure of area districts, a new federal-state-local-student support program is possible and may tend to bring these districts closer to the national trends.

Projection of Expenditures

The following figures indicate the approximate amounts of money required to meet growing enrollment demands, accommodate rising costs, be competitive for faculty and staff, and carry on expanded programs for each segment of post high school education in Iowa.

Estimated Annual Operating Expenditures for Regents Institutions

	1964-65	1970-71	1975-76	1980-81
A. Expenditures related to Instruction	$ 48,746,000	$100,723,000	$148,130,000	$213,001,000
B. Other Expenditures	52,225,000	107,911,000	158,702,000	228,202,000
TOTAL	$100,971,000	$208,634,000	$306,832,000	$441,203,000

The projected expenditures for the activities of the Regents institutions which are most closely related to instruction are shown in line A in the table above. The second set of figures (line B) includes the accounting classifications of Organized Activities (such as the University Hospitals, the Atomic Research Institute, Agricultural Experiment Station, etc.), Extension and Public Service, and Organized Research.

Expenditures at the Regents institutions are projected to double from 1964-65 to 1970-71 and quadruple by 1980-81.

Estimated Annual Operating Expenditures for Community Colleges

1964-65	1970-71	1975-76	1980-81
$2, 622, 000	$26, 170, 000	$43, 414 000	$60, 522, 000

The tremendous proportional increase in community college expenditures (estimated to increase tenfold from 1964-65 to 1970-71 and to double again by 1980-81) reflects the rapid expansion of enrollment anticipated and the development of specialized programs, particularly in the vocational-technical fields.

Estimated Annual Operating Expenditures for Private Colleges

	1964-65	1970-71	1975-76	1980-81
Private Four-Year	$30, 013, 000	$66, 548, 000	$ 97, 386, 000	$136, 368, 000
Private Two-Year	577, 000	3, 060, 000	3, 852, 000	4, 949, 000
TOTAL	$30, 590, 000	$69, 608, 000	$101, 238, 000	$141, 317, 000

Since private college expenditures are almost solely related to enrollments (97.3 per cent of the expenditures are for educational and general operations and only 2.7 per cent for allied services), only the total expenditure needs are shown above. As in the case of the Regents institutions, it is estimated that the cost for these schools will more than double the 1964-65 figure by 1970-71 and will increase over four times by 1980-81.

In summary, total operating expenditures for all post high school education in Iowa are projected to be as follows:

Estimated Total Annual Operating Expenditures For All Types of Institutions

	1964-65	1970-71	1975-76	1980-81
Regents	$100, 971, 000	$208, 634, 000	$306, 832, 000	$441, 203, 000
Community Colleges	2, 622, 000	26, 170, 000	43, 414, 000	60, 522, 000
Total Public	$103, 593, 000	$234, 804, 000	$350, 246, 000	$501, 725, 000
Private Colleges	30, 590, 000	69, 608, 000	101, 238, 000	141, 317, 000
TOTAL ALL TYPES	$134, 183, 000	$304, 413, 000	$451, 484, 000	$643, 042, 000

The reader is referred to Chapter X and XI where the methods by which these figures were determined are indicated in detail. In general it may be said that about half of the increased cost for the four-year colleges (both Regents and private colleges) results from the estimated doubling in enrollment between 1964-65 and 1980-81 and the other half reflects assumptions regarding increased costs per student, which are estimated to double in this sixteen-year period, rising at the rate of approximately 5 per cent a year. The figures for the community colleges reflect even greater percentage increases in enrollment and a quadrupling of unit costs of instruction from 1964-65 to 1980-81.

It is recognized that while salary and other costs of operating the four-year institutions have risen at the rate of approximately 5 per cent per year during the last dozen years, the unit costs per student have increased at a much slower rate because the student-teacher ratios have been allowed to increase appreciably since the mid-1950's. It is assumed herein, however, that this latter trend should not be allowed to continue, since it seriously threatens a deterioration in the quality of instruction, research, and services provided by these institutions.

Sources of Income

The staggering problems involved in financing such greatly increased expenditures as listed above may readily be seen by projecting anticipated income on the basis of assumptions currently held regarding:

1. The proportion of the cost of instruction it is reasonable to charge students in each type of institution;
2. The share of support to be provided by local, state and federal governments for each type of institution; and
3. The support that can be expected from private donors in each case.

Regents Institutions

In the Regents institutions, approximately 48 per cent of the total operating budget (not including residence halls) has been supported by state funds and approximately 27 per cent from federal appropriations and grants (information for the 1964-65 fiscal year). Student fees account for approximately 11 per cent of the income[4] and the remaining 14 per cent has come from miscellaneous sources.

Sources of Income For Operating Expenses - Regents Institutions

1964-65

	%	Amount
State of Iowa	48	$48,000,000
Federal Government	27	27,000,000
Student Fees	11	11,000,000
Other	14	14,000,000

If it is assumed that the state and federal governments will provide the same share of the income in 1980-81 as in 1964-65, the state would have to provide about $212,000,000 and the federal government about $119,000,000. Student fees, to provide the same percentage of the projected income, would have to increase to $48,500,000, and an additional $62,000,000 would have to come from the other sources.

This represents more than a 400 per cent increase in appropriations from the state legislature, and a doubling of student fees to approximately $700 per academic year per student.

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[4] Although student fees account for only 11 per cent of the total income, they represent about 25 per cent of the cost of instruction.

Community Colleges

As shown in the table below, during 1964-65 public community colleges received about 33 per cent of their income for operating purposes from state appropriations, about 3 per cent from the federal government, 24 per cent from local tax sources, and 39 per cent from student tuition and fees.

Sources of Income For Operating Expenses - Community Colleges

1964-65

	%	Amount
State of Iowa	33	$ 865,000
Federal Government	3	78,000
Local Taxes	24	629,000
Student Fees	39	1,023,000
Other	1	26,000

The recent legislation developing the new area community colleges, unless changed substantially, will alter the proportions of income from the sources in the above table. Using the 1980-81 projected budget ($60,522,000) and assuming the current legislation does not change, student tuition and fees, now set at not more than $200 per year, would provide about $8,400,000, or approximately 14 per cent of the projected 1980-81 budget--even though enrollments are projected to increase substantially. State support, increased from $1.50 to $2.25 per student per day, would nevertheless decrease to 28 per cent, $17,000,000 of the estimated 1980-81 budget. Under the present arrangements, support from local taxation would also provide a significantly smaller proportion of the total community college operating income as budgets increase to the 1980-81 level. Assuming property values do not increase markedly, the three-fourths mill levy provided for community college operating expenses would provide not more than $5,000,000, or approximately 8 per cent of the 1980-81 budget. On the other hand, the federal government, which provided only 3 per cent of the community college income in 1964-65, might be expected to increase its proportion through the various vocational-technical programs to perhaps $5,000,000 per year, or about 8 per cent of the 1980-81 budget. As it is unlikely that income from miscellaneous sources will increase substantially, present circumstances would leave a gap of about $24,600,000, or 41 per cent, in the projected income needed for 1980-81. Although federal funds might increase, the bulk of the additional income necessary will have to come from the state, unless local taxes and student tuition and fees are to increase substantially.

Private Colleges

As indicated below, private colleges obtain about 72 per cent of their income from student fees, 20 per cent from private donors (including income from endowments), and the other 8 per cent from miscellaneous sources, including small amounts from federal grants.

Sources of Income For Operating Expenses - Private Colleges

1964-65

	%	Amount
Student Fees	72	$22,000,000
Private Donors	20	6,000,000
Other	8	2,400,000

If it is assumed, as was done in the case of the Regents institutions, that these colleges will have to continue to rely on their present sources of income to about the same extent as at present, student fees will have to increase to an average of approximately $1,670 (not including room and board) per academic year in 1980-81, and gifts from private donors will have to be increased by $22,000,000 in the next sixteen years.

Conclusions - Expenditures and Income

The following major conclusions are based on analysis of the foregoing information regarding projected expenditures and possible sources of income:

1. Even assuming a substantial rate of economic growth in Iowa, existing state taxes cannot be expected to bring in sufficient revenue to meet the expenditures projected for the Regents institutions in the 1970's and early 1980's. Consequently, federal support must be greatly increased or state taxes must be raised substantially (including the possibility of tapping new sources of state tax revenue), or both, if the projected levels of expenditures are to be met.
2. Private colleges and universities cannot rely on tuition increases alone to meet increasing institutional expenditures. It is possible that even reliance upon student fees to carry the same proportion of total costs as they have in the past in private schools may not be feasible. These institutions should, of course, seek additional gifts from private individuals, organizations, businesses, and foundations, but, if private education is to continue to be available to large numbers of students in Iowa, additional federal funds and possibly state funds may have to be made available to these institutions in one way or another.
3. Action is needed immediately to assure substantially increased support for the community colleges; the most probable sources are increased tax funds and increases in student fees.
4. Coordinated educational and fiscal planning will be required in order that the educational goals having high priorities may not be lost due to any inability to support the total program desired.
5. It becomes abundantly clear that all segments of post high school education in Iowa are looking increasingly to the state treasury for the support necessary to meet the substantial increase in expenditures anticipated in the next fifteen years.

Student Fees

Broad public policy is inevitably involved in the setting of fees for students attending various colleges and universities. The level of fees and the availability of scholarships and other financial aids influence student choices and directly affect the degree to which educational opportunity is in fact open to all students of requisite ability.

If student fees were to produce the same proportion of the costs of instruction in 1980-81 as in 1964-65 it would inevitably increase the dollar amount of the student fees. It is estimated that average fees at Regents institutions would double to about $750 a year, that community college fees would treble to about $500 a year, and that the averages of all private college and university fees would more than double to about $1, 400. These averages are not truly comparable since they include student fees for different types and levels of education, (undergraduate, graduate, advanced professional, and vo-tech), but it does indicate somewhat the magnitude of the changes possible.

It is clear from all the data presented on expenditures and income that the boards responsible for administering the post high school educational institutions will be subjected to severe pressures--on the one hand, to raise fees to meet costs without placing too great a burden on the taxpayers or donors and, on the other hand, to lower fees in order to make educational opportunity available to larger numbers of students.

It should be recognized that no matter at what level fees are set, they will tend to work a hardship on some qualified students (and will effectively bar numbers of able students) unless financial aids are available. It is sound policy for all institutions to operate carefully administered scholarships and loan funds to assist such students. It is specifically recommended that funds for the Iowa state scholarship program be substantially increased.

Governance and Coordination

The Present Situation

Responsibility for planning and administration of post high school education in Iowa, as in most states, is divided among many different governing bodies; moreover, there is no official body responsible for coordination of the various phases of post high school education throughout the state. While this study was not intended to create a master plan which would indicate the specific size, function, and location of schools, colleges, and universities at various dates in the future, the Board of Directors did feel it necessary to face squarely the fact that all governing bodies in the state are interested in essentially the same basic problems and that, for the good of the state, ways must be found through which the broad problem of providing education beyond the high school can be faced as a whole, as well as in its various segments.

The major governing bodies for higher education in Iowa fall into the following four categories:

1. The governance of The University of Iowa, Iowa State University, and the State College of Iowa is invested in a State Board of Regents. These institutions have a heavy responsibility at the undergraduate or baccalaureate degree level and the major responsibility for the graduate programs and advanced professional programs and specialized services in the state.

2. The State Board of Public Instruction has primary responsibility for supervision of the Area Community Colleges and Area Vocational-Technical Schools which are governed in their day-to-day operation by Area Boards of Education. Much of the potential of this system is as yet to be developed, but the state has definitely committed itself to a broad system of community colleges and area vocational schools to serve the entire state. The Regents institutions and the area colleges and schools must function together in a harmonious manner.

It should be recognized, of course, that ultimate authority for the creation and support of all these public institutions lies with the Iowa General Assembly.

3. The state also has a large number of individual private colleges (twenty-nine at the time this study was undertaken, two more added since), each under its own board, in many cases serving a special clientele; these institutions are loosely bound together by the Iowa Association of Private Colleges and Universities. Only in a very vague sense can these private colleges be referred to as a "system" of higher education; yet, taken as a group, these institutions also have a complementary relationship to the Area schools and the Regents schools. Since each school is unique, it contributes to the diversity of opportunities to meet student needs within the state. To a much greater extent than the Regents and Area schools, the private colleges also have ties outside the state and responsibilities to constituent groups which reach far beyond the borders of the State of Iowa.

4. There is a fourth group which operates no institutions but which is involved in post high school education in Iowa. This is the Higher Education Facilities Commission created by the General Assembly, with responsibility for distributing certain federal funds for higher education and administering the state scholarship program. It has an important relationship to all higher education in the state.

After considering a comprehensive set of alternatives regarding governance and coordination of the above-listed educational institutions, and carefully weighing the pros and cons for each possible modification of the existing arrangements, the Board of Directors of this study agreed on the following recommendations concerning these matters:

Recommendations Regarding Governance

This report recommends that the provisions for governance remain as they are at present.

Recommendations Regarding Coordination

This report further recommends that the institutions of post high school education in Iowa take official steps to continue the cooperative efforts which made this study possible. To this end it is recommended that a permanent voluntary coordinating group be established, to be called the Iowa Coordinating Council for Post High School Education, and to be supported financially by the participating institutions. The council should have a membership about evenly divided between institutional representatives and members of governing boards, with equal representation from the three main segments of post high school education in Iowa and some representation from the Higher Education Facilities Commission. The Council should either establish a central office to make systematic studies, or arrange for an existing school or agency to provide such service.

As a voluntary organization, the Council's main function would be to make recommendations for effective coordination to the various boards ultimately responsible for post high school education in Iowa. To perform this function adequately, the Council necessarily would: 1) meet at regular intervals to insure continuous dialogue among all facets of post high school education, 2) make studies and provide other information needed for sound institutional and statewide planning, 3) receive information from boards and institutions concerning their problems, plans, and legislative requests, and 4) make recommendations to such boards and institutions in the interests of state-wide coordination. The Council would make a biennial report of its activities and the results achieved to the institutions and their governing boards. The biennial reports would also be made available to interested citizens to assist them in the decisions they must make in supporting post high school education.

CHAPTER II

THE IOWA ECONOMY: SOME IMPLICATIONS

When measured by the standard indices of economic performance, the rate of growth of the Iowa economy, while not as great as that of the nation as a whole, is encouraging. Unemployment is much lower in Iowa than in the nation. The unemployment rate of 2.2 per cent of the labor force in Iowa was half of the 1965 national average. This in itself reflects the excellent transition that the state is making in the face of the severe adjustments taking place in the agricultural sector of the economy. Furthermore, non-farm income is growing at approximately the same rate in Iowa as it is in the nation.

Income - Iowa and Comparisons

Personal income is perhaps the best single indicator of the overall condition of the economy. Using a short-time view of the Iowa economy for a single year, Papke reported that the personal income of Iowans reached record highs in 1965, and the rate of increase was 25 per cent greater than that of the nation.[1] Papke further relates that the agricultural sector of the economy of Iowa shared in this overall prosperity.

The Economic Development and Manpower Committee of the Iowa Cooperative study of Post High School Education studied income patterns for the state for a much longer period -- 1950 to 1964, with projections to 1975. From 1950 to 1964, Iowa's annual rate of change in total personal income was the second lowest in the Plains region and much lower than the national average. For the period of 1964 to 1970, this study indicates Iowa's rate of growth will increase significantly, although it is not likely to advance much faster than that of the region and the nation as a whole. During the 1970-75 period, however, Iowa should roughly parallel the growth rate in the Plains region, and the disparity between Iowa and the nation should be reduced. In brief, Iowa will participate in the benefits of a continuously expanding economy.

A Change in Income Mix for Iowa

A comparison of labor income and farm proprietors' income for the Plains Region and the United States during selected periods from 1960 to 1975 reveals significant data concerning the income mix that is rapidly developing in Iowa. Historically, labor income in the nation has accounted for about two-thirds of personal income. In the Plains Region, labor income has accounted for somewhat less because of the relatively heavy concentration of agriculture. In 1960, the shares of Iowa personal income going to labor and farm proprietors were approximately 56 per cent and 12 per cent, respectively, while the figures for the nation were 70 per cent and 3.1 per cent of the total.

By 1975, this situation will change considerably. Labor income in Iowa will account for almost 60 per cent of the total, while farm proprietors' income will amount to 6.8 per cent of the personal income. Furthermore, when all components of income are measured for the State of Iowa, only farm proprietors' income shows an absolute decline.

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[1] Summary of Research Findings for Governor's Study of the Tax Structure of the State of Iowa, page 2.

Nevertheless, when considered from a national standpoint, agricultural activity and farm proprietor's income will still be relatively important to Iowa and other states in this region.

Employment Structure

As previously indicated, total personal income and per capita income in the agricultural Midwest will grow substantially over the next ten years, although somewhat more slowly than the national income as a whole. This is especially true for Iowa. Employment in the category "Agriculture, Forestry, and Fisheries" shows a persistent decline in every state. The magnitude of change taking place in agricultural employment is dramatically shown by the fact that during the 1950-60 decade, farm employment in Iowa declined by 74,875 jobs, a decrease of 26.2 per cent. Despite the large decline of agricultural employment in Iowa and elsewhere, agriculture will tend to become more concentrated in the Plains and Midwest. This results from the fact that employment in agriculture is declining even faster in the nation as a whole than it is in this region of the country.

Between 1940 and 1960, the number of employed persons in Iowa grew by 156,221, an increase of slightly more than 18 per cent. This growth has been almost entirely the result of an influx of women into the world of work. During this twenty-year period, approximately 138,000 women were added to the force of Iowa, compared with an increase of 18,000 men. In fact, the number of employed males in Iowa actually declined during the last ten years of this period. If past trends prevail through the remainder of the sixties, it is estimated that the employed male work force will decline by another 30,000 jobs, while female employment will increase by 88,000. The state need not stand by while male employment drops to this extent. State government, Iowa business and industry, and post high school educational institutions should make an effort to reverse this trend.

Projected Employment in Major Industries

Future employment levels are difficult to anticipate because employment is dependent upon technological knowledge and its application, along with the pattern and level of demand for goods and services. The latter demand is influenced by factors such as tastes of consumers, investment decisions, government expenditures, production techniques, new products, and other factors that are not always easily forecast. Regardless of these difficulties, immediate past events generally offer a fair image of the employment pattern for the near future. With this in mind, probable future changes in Iowa employment are indicated.

The extractive industries, particularly agriculture, are expected to continue to decline in the employment of both males and females between 1960 and 1970 as shown in Tables I and II. Yearly employment declines in agriculture may be in excess of 4,500 for men and run about 2,300 for women.

Yearly employment declines are also forecast for male workers in the construction, transportation, wholesale and retail trade, business and repair services, personal services, and entertainment industries. Besides agriculture, the only major industrial sector in which an actual decline in the employment of women is projected is mining.

TABLE I
EMPLOYMENT BY MAJOR INDUSTRIAL GROUPS FOR MALES, IOWA: 1950, 1960, 1970

Major Industrial Groups	1950	1960	Per cent Change 1950-1960	1970	Per cent Estimated Change 1960-70
Agriculture, forestry, and fisheries	265,896	193,795	-27.12	146,490	-24.5
Mining	3,140	2,264	-27.90	1,696	-25.1
Construction	53,394	50,869	- 4.73	49,211	- 3.3
Manufacturing	121,130	149,356	23.30	187,636	25.6
Transportation	45,720	36,901	-19.29	30,491	-17.4
Communications	3,392	5,207	53.51	8,272	58.9
Utilities	9,780	10,812	10.55	12,066	11.6
Wholesale and retail trade	126,424	123,010	- 2.70	120,021	- 2.5
Finance, insurance, and real estate	16,103	19,405	20.51	23,783	22.6
Business and repair services	23,689	16,813	-29.03	12,420	-26.2
Personal services	14,239	112,015	-15.62	10,326	-14.1
Amusement, recreation, and related services	5,876	3,946	-32.85	2,780	-29.6
Professional services	34,466	48,072	39.48	68,945	43.4
Government	22,583	23,214	2.79	23,924	3.1

Source: Working papers of Committee "F"; Economic Development and Manpower Committee, Iowa Cooperative Study of Post High School Education, June, 1966, p. 49.

Among the non-agricultural industries, those furnishing services are expected to continue their upward trends in male employment through 1970. These industries include communications; utilities; finance, insurance, and real estate; government; and professional services. The greatest increase in service-related employment is expected to be in the category of "professional services," where more than 20,000 men are expected to secure jobs. The most rapid growth in terms of absolute increase is projected for manufacturing, where an additional 38,280 men may find employment by 1970.

The number of women in the professional services category is expected to increase by more than 50 per cent between 1960 and 1970, an average annual gain of 4,800 women. In addition to the professional service industry, all of the remaining service-rendering sectors are expected to increase their employment of women significantly between now and 1970. Employment in trade, construction, and manufacturing is expected to make similar advances. Of these latter categories, the largest annual gains are anticipated in manufacturing, where more than 1,300 women may find jobs yearly.

TABLE II
EMPLOYMENT BY MAJOR INDUSTRIAL GROUPS FOR WOMEN, IOWA: 1950, 1960, 1970

Major Industrial Groups	1950	1960	Per cent Change 1950-1960	1970	Per cent Estimated Change 1960-70
Agriculture, forestry, and fisheries	19,530	16,728	-14.32	14,387	-13.9
Mining	168	118	-29.76	86	-27.1
Construction	1,490	2,110	41.61	3,076	45.8
Manufacturing	30,813	40,304	30.80	53,959	33.9
Transportation	2,235	2,548	14.00	2,940	15.4
Communication	6,935	7,223	4.15	7,552	4.6
Utilities	1,364	1,684	23.46	2,118	25.8
Wholesale and retail trade	65,963	75,577	14.57	87,684	16.0
Finance, insurance, and real estate	11,545	17,154	48.58	26,319	53.4
Business and repair services	2,775	3,910	40.90	5,669	45.0
Personal services	30,136	36,874	22.36	45,941	24.6
Amusement, recreation, and related services	2,403	2,614	8.78	2,866	9.6
Professional services	53,147	81,580	53.50	129,590	58.9
Government	7,654	9,596	25.37	12,273	27.9

Source: *Ibid.*, p. 50.

Projected Employment in Major Occupations

Significant changes in occupational employment patterns are in prospect for Iowa as a result of differentials in growth trends among industries. Tables III and IV indicate that rapid growth of white-collar occupations for both males and females is expected through 1970. Included in these employment sectors are primarily professional, technical, clerical, sales, and service jobs. Slower growth for both male and female blue-collar employment is projected. Rapid growth is projected among operatives, whereas only moderate growth in the number of craftsmen is anticipated. A decline in laborers is in the offing.

Employment of professional, technical, and kindred workers, which have been by far the fastest growing occupational groups during the fifties for males, may increase by more than 40 per cent (22,000 positions) between 1960 and 1970. Table III shows that growth in the operative occupations is projected to be somewhat slower than professionals, with an expected gain of almost 15,000 men during the sixties. In clerical, sales, craftsmen, foremen, and service occupations, future gains are likely to be slower than in the above categories, with net declines anticipated in the managers, officials, proprietors, and laborers sectors.

The number of women working in diverse service occupations is expected to increase by 50 per cent between now and 1970. This growth represents an annual increase of almost 40, 000 women. A relatively rapid rise in employment of clerical, sales, and kindred workers through 1970 is anticipated to run a close second to the expansion in the number of female service workers. Table IV points up an estimated projection of 152, 323 clerical and sales positions by 1970, indicating that during the sixties nearly 3, 800 additional jobs will be added to this occupation each year. From 1960 to 1970, projections of past changes indicate that the annual increase in the number of positions in professional services will be 1, 100; for managers, officials, and proprietors, the annual increase is likely to number 300; and for operatives, 560. The number of female craftsmen is expected to be constant during the sixties, while a 50 per cent decline in the female "labor" category is projected for 1970.

TABLE III
EMPLOYMENT BY MAJOR OCCUPATIONAL GROUPS
FOR MALES, IOWA: 1950, 1960, 1970

Major Occupational Groups	1950	1960	Per cent Change 1950-1960	1970	Per cent Estimated Change 1960-70
Professional, technical, and kindred workers	40, 317	53, 435	35. 02	75, 403	41. 1
Managers, officials, and proprietors (incl. farm)	270, 645	222, 284	-17. 87	186, 519	-16. 1
Clerical, sales, and kindred workers	80, 063	82, 804	3. 42	85, 917	3. 8
Craftsmen, foremen, and kindred workers	109, 683	110, 424	. 68	111, 917	1. 4
Operatives and kindred workers	103, 445	115, 183	11. 35	129, 673	12. 6
Service workers	30, 689	31, 874	3. 86	33, 229	4. 3
Laborers (incl. farm)	113, 432	75, 233	-33. 68	52. 422	-30. 3

Source: Ibid., p. 53.

TABLE IV
EMPLOYMENT BY MAJOR OCCUPATIONAL GROUPS FOR WOMEN, IOWA: 1950, 1960, 1970

Major Occupational Groups	1950	1960	1950-1960	1970	Per cent Estimated Change 1960-70
Professional, technical and kindred workers	36,369	44,900	23.46	56,484	25.8
Managers, officials, and proprietors (incl. farm)	12,565	14,893	18.52	17,927	20.4
Clerical, sales, and kindred workers	87,596	114,194	30.36	152,323	33.4
Craftsmen, foremen, and kindred workers	3,221	3,222	.03	3,223	*
Operative and kindred workers	26,297	30,636	16.50	36,196	18.1
Service workers	52,170	76,727	47.07	116,449	51.8
Laborers (incl. farm)	18,762	12,141	-35.29	8,286	-31.8

Source: Ibid., p. 50.
*Less than 0.01 per cent.

Projected Employment in Major Occupational-Industry Groups

Each industry has its own occupational pattern which is subject to frequent change because of various economic developments. The changing occupational composition of the work force within each industry and the irregular growth of industries affects the demand for workers with specific occupational skills. Therefore, an assessment of future employment trends in major occupations within each industry is helpful in an appraisal of future manpower needs.

Tables V and VI reflect some net advances in employment projected for both sexes in agricultural, forestry, fishery, and mining industries during the sixties. However, with the exception of female employment in agriculture, these advances are somewhat negligible. For instance, projections from past changes indicate that the annual increase in the number of agricultural jobs for men will be thirty in professional and technical positions and three in clerical and sales activities. In the case of women in agriculture, the following number of jobs may be added yearly: 522 managers, proprietors, and officials; sixty-five clerical and sales; and thirty-seven operatives. In mining, the number of men employed as craftsmen and foremen is anticipated to expand by 124 during the sixties.

In the goods-producing industries (construction and manufacturing), significant employment growth is forecast in almost all of the job categories for both males and females. From 1960 to 1970 the number of job vacancies for men in manufacturing is expected to increase by nearly 25 per cent. The most substantial gains for the decade include the following: 18,240 operatives, 10,211 professionals, 6,053 clerical and sales, and 1,783 managers. The category of laborer is the only manufacturing occupation expected to decline in the sixties. Losses in this category may run about 140 jobs annually.

Projected gains for women in manufacturing are anticipated to be about 664 per year in operatives, 650 per year in clerical and sales, and fifty in professional. No change is expected in the number of female managers, while a total decline of about 260 laborers is projected by 1970.

In the transportation, communication, and utility industries, occupational growth patterns are mixed, with only moderate net annual employment increases projected for both sexes. Employment projections to 1970 show that the number of men in every occupational group within transportation is expected to decline, while women employed as clerical and sales personnel may increase by thirty-four per year, and operatives by twenty-five. The most rapid absolute gains for males in communications are expected in craftsmen and foremen occupations at a rate of eighty-seven job openings annually, managers, officials, and proprietors at an annual rate of seventy-nine, and professional and technical at a rate of forty-six. Women, on the other hand, are expected to make very small gains in most occupations within communications. The most rapid net gains are projected for the professional, clerical, and sales occupations. As for the utility industry, the areas where the gains are expected to be largest include males in the professional, technical, manager, official, proprietor, and craftsmen and foremen occupations, and females in clerical and sales positions.

If past shifts continue, then three occupations within the trade industries will experience employment growth for both sexes through 1970. The projected increases for males comprise about 6,200 craftsmen and foremen, 1,800 operatives, and 184 laborers. Over the same period, the net increase in the number of women working in clerical and sales jobs is expected to advance by more than 7,900, and by more than 5,900 and 300 in service and craftsmen occupations, respectively. Among the remaining occupations, employment declines are forecast for both sexes.

Tables V and VI indicate that among those industries furnishing services, only finance, insurance, and real estate, professional services, and government anticipate a significant advance in the number of new jobs available for both sexes. However, in business and repair services, particularly personal and entertainment services, males employed in almost every occupational group are expected to decline. In the case of females, a large number of occupational sectors among the above industries are expected to expand between 1960 and 1970. For example, the growth projected for women in the personal service industry is among service workers. More than 10,300 new jobs will be available in this occupation by 1970. In the business and repair service industry a total net increase of 897 clerical and sales positions is anticipated. In entertainment some 892 women may secure employment as service workers.

In projecting past trends, the largest absolute gains in finance for male workers are in clerical and sales occupations (293 annually), and in managers, official, and proprietor occupations (117 annually). Women will find that the largest number of job opportunities in this industry will be in clerical and sales. Projections through 1970 indicate that 1, 100 additional jobs per year will be available in this occupational sector.

In the professional services industry, Tables V and VI show substantial net advances in employment of both males and females throughout the sixties. The most rapid net gains per year for men are forecast for professional and technical (1, 360), service workers (39), and craftsmen and foremen (195). As for women, the occupations with rapid growth potential appear to be in service workers (3, 010 per year), clerical and sales (1, 390), and professional and technical (1, 120). On balance, both males and females can anticipate future employment opportunities in the professional services industry.

In the government services industry, only moderate employment gains among the various occupations are expected for male and female workers. In the near future, job openings for men in government are likely to occur in professional, technical, managerial, official, and service occupations. Women can expect employment increases in professional, technical, clerical, sales, and service occupations.

TABLE V
OCCUPATIONAL-INDUSTRY EMPLOYMENT MATRIX FOR MALES, IOWA: 1950, 1960, 1970

GROUPS	Year	Agriculture, Forestry and Fisheries	Mining	Construction	Manufacturing	Transportation	Communication	Utilities
Professional, technical, and kindred workers	1950	1, 074	24	1, 249	5, 478	451	172	756
	1960	1, 303	31	2, 088	10, 378	381	935	886
	1970	1, 608	41	3, 631	20, 589	328	1, 390	933
Managers, officials, and proprietors (incl. farm)	1950	196, 780	321	4, 124	8, 302	3, 604	513	866
	1960	153, 947	273	4, 641	10, 085	2, 841	914	905
	1970	123, 763	236	5, 281	12, 467	2, 490	1, 700	950
Clerical, sales and kindred workers	1950	310	119	764	14, 111	5, 268	478	869
	1960	330	91	707	18, 345	4, 370	584	1, 140
	1970	353	72	660	24, 398	3, 701	726	1, 531
Craftsmen, foremen, and kindred workers	1950	298	505	33, 537	28, 853	9, 249	1, 975	3, 968
	1960	218	600	31, 115	33, 334	6, 189	2, 579	4, 493
	1970	165	724	29, 093	39, 027	4, 346	3, 446	5, 147
Operatives and kindred workers	1950	995	2, 138	3, 718	47, 270	19, 781	85	1, 767
	1960	908	1, 237	3, 925	60, 276	19, 050	37	1, 921
	1970	837	755	4, 165	78, 516	18, 416	18	2, 103
Service workers	1950	155	17	103	2, 657	542	91	122
	1960	138	16	91	2, 894	209	103	116
	1970	124	15	81	3, 178	93	118	111
Laborers (incl. farm)	1950	66, 229	11	9, 788	13, 776	6, 755	66	1, 388
	1960	36, 923	--	8, 087	11, 371	3, 647	31	1, 287
	1970	22, 217	--	6, 821	10, 393	2, 137	16	1, 203

TABLE V (Continued)

GROUPS	Year	Wholesale and Retail Trade	Finance, Insurance, Real Estate	Business and Repair Service	Personal Services	Amusement, Recreation, Related Services	Professional and Related Services	Government
Professional, technical, and kindred workers	1950	2, 535	532	834	1, 349	1, 203	21, 999	2, 482
	1960	2, 233	586	438	1, 044	470	30, 824	2, 359
	1970	1, 994	651	251	832	212	44, 427	3, 336
Managers, officials, and proprietors (incl. farm)	1950	39, 628	4, 194	3, 110	1, 659	1, 684	1, 350	3, 462
	1960	32, 775	5, 395	1, 701	1, 502	1, 092	1, 946	4, 027
	1970	27, 672	7, 094	1, 007	1, 374	746	2, 891	4, 750
Clerical, sales, and kindred workers	1950	36, 209	8, 971	1, 944	667	361	1, 273	8, 375
	1960	34, 115	11, 118	1, 227	521	218	1, 671	8, 249
	1970	32, 338	14, 044	820	418	140	2, 245	8, 133
Craftsmen, foremen, and kindred workers	1950	11, 355	386	14, 594	1, 395	596	1, 484	1, 465
	1960	15, 511	455	10, 338	974	558	2, 527	1, 433
	1970	21, 756	544	7, 624	709	526	4, 480	1, 405
Operatives and kindred workers	1950	20, 633	146	1, 934	2, 386	121	1, 091	1, 063
	1960	22, 203	119	2, 065	1, 650	72	976	661
	1970	24, 061	99	2, 219	1, 192	46	883	486
Service workers	1950	7, 271	1, 089	342	5, 688	1, 607	6, 624	4, 161
	1960	6, 632	937	364	5, 056	1, 222	9, 217	4, 851
	1970	6, 107	819	390	4, 550	958	13, 186	5, 735
Laborers (incl. farm)	1950	8, 493	740	590	1, 062	277	586	1, 348
	1960	8, 658	683	625	1, 206	306	592	955
	1970	8, 342	686	457	1, 386	341	599	705

Source: Ibid., pp. 56-57.

Implications for the Development of Post High School Education in Iowa

The facts presented concerning the basically healthy state of the Iowa economy and the favorable outlook for the state to "participate in the benefits of a continuously expanding society" indicate that Iowa should be able to make the investment necessary to develop and and maintain a strong system of post high school education. At the same time, inasmuch as Iowa's per capita income is somewhat lower than the national average, it is clear that the citizens of the state will have to make a greater effort (be willing to spend a somewhat larger proportion of their total income on education beyond the high school) than the citizens of the wealthier states in order to compete successfully for the services of the highly qualified personnel necessary to staff high-quality institutions. But Iowans have long ranked high in this regard; they take pride in maintaining strong colleges and universities.

A study of the data concerning the Iowa economy and the occupational trends (especially Tables V and VI) reveals need for a great diversity of talent in practically all industries. This talent ranges from the unskilled laborer to the sophisticated scientist. Post high school education must meet this diversity of demand; emphasis ought not be put on only four-year college programs. The need for trained personnel in special areas ranging from industrial operatives to technical workers in engineering must be met.

The projected migration of workers from agricultural to non-agricultural pursuits implies retraining for occupational transfer and adjustment. Because of the complexity of farm operations and the tendency toward larger-scale operation, there is a need for increased technology on the part of farmers and for technicians in experimental and research activities.

The projected growth of employment of females as opposed to males is a factor to be given serious consideration by educators in planning future educational offerings. Many females will be homemakers who will be returning to the labor market, requiring new skills and knowledge as well as refresher courses.

TABLE VI
OCCUPATIONAL-INDUSTRY EMPLOYMENT MATRIX FOR FEMALES, IOWA: 1950, 1960, 1970

GROUPS	Year	Agriculture, Forestry & Fisheries	Mining	Construction	Transportation	Manufacturing	Communication	Utilities
Professional, technical, and kindred workers	1950	43	2	34	35	1,011	50	48
	1960	39	-	85	25	1,354	136	63
	1970	36	-	125	19	1,859	393	85
Managers, officials, and proprietors (incl. farm)	1950	2,354	8	60	111	530	79	25
	1960	4,722	11	47	80	330	124	8
	1970	9,946	15	38	60	530	202	3
Clerical, sales and kindred workers	1950	460	119	824	1,475	10,675	6,646	1,221
	1960	792	100	1,573	1,735	14,906	6,751	1,512
	1970	1,421	86	3,146	2,071	21,404	6,868	1,908
Craftsmen, foremen and kindred workers	1950	23	20	442	23	1,395	79	24
	1960	12	--	287	8	1,507	71	--
	1970	7	--	196	3	1,640	65	--
Operatives and kindred workers	1950	235	14	29	346	15,525	20	16
	1960	424	3	4	504	20,170	16	7
	1970	799	1	1	757	26,808	13	3
Service workers	1950	103	3	16	100	376	49	19
	1960	40	4	58	90	584	90	50
	1970	18	5	225	82	225	173	140
Laborers (incl. farm)	1950	16,272	1	81	138	1,137	1	9
	1960	10,671	-	40	83	772	8	13
	1970	7,365	-	22	53	549	62	19

TABLE VI (Continued)

GROUPS	Year	Wholesale and Retail Trade	Finance, Insurance, Real Estate	Business and Repair Service	Personal Services	Amusement, Recreation Related Services	Professional and Repairs Services	Government
Professional, technical,and kindred workers	1950	511	147	125	506	428	32, 625	780
	1960	458	180	180	373	334	40, 778	844
	1970	415	224	267	285	268	51, 984	989
Managers, officials, and proprietors (incl. farm)	1950	5, 341	795	147	681	203	746	937
	1960	5, 025	916	197	800	235	1, 233	937
	1970	4, 393	1, 069	271	954	276	2, 118	937
Clerical, sales and kindred workers	1950	36, 623	9, 833	2, 081	1, 470	1, 001	8, 820	5, 618
	1960	42, 786	15, 150	2, 951	1, 761	846	15, 857	7, 343
	1970	50, 706	24, 160	3, 848	2, 145	728	29, 771	9, 823
Craftsmen, foremen and kindred workers	1950	664	30	147	176	31	91	14
	1960	879	7	158	94	12	171	4
	1970	1, 192	2	171	55	5	336	2
Operatives and kindred workers	1950	4, 353	61	190	4, 465	55	828	69
	1960	4, 028	55	275	3, 959	13	1, 112	47
	1970	3, 757	50	410	3, 555	4	1, 532	34
Service workers	1950	17, 337	621	52	22, 607	661	9, 840	236
	1960	21, 640	746	100	29, 731	1, 134	22, 053	358
	1970	27, 548	911	202	40, 036	2, 026	52, 162	562
Laborers (incl. farm)	1950	509	25	24	178	16	128	30
	1960	285	29	24	107	20	72	--
	1970	172	34	34	60	26	44	--

It must not be forgotten that the educational program has a responsibility in meeting the needs of the adult population. Programs must be offered to adults who wish to broaden their knowledge in the liberal arts, as well as to those who want to improve their technical skills or learn new ones. Two-year curricular and short-term sequential programs should be provided to meet these goals, including a wide variety of vocational, technical, and semi-professional courses that combine theory with practical training and experience.

CHAPTER III

IOWA POPULATION PATTERNS

Independent population projections made for this survey confirm the rather slow increase in population projected for Iowa by the United States Census Bureau.[1]

TABLE I
IOWA POPULATION PROJECTIONS
1965, 1970, 1975, 1980

Year	Male	% of Total	Female	% of Total	Total	Increase	% Increase
1960	1,359,047	49.2	1,398,490	50.8	2,757,537		
1965	1,371,209	49.1	1,418,517	50.9	2,789,726	32,189	1.17
1970	1,383,365	49.0	1,438,549	51.0	2,821,914	32,188	1.15
1975	1,397,214	48.9	1,459,232	51.1	2,856,448	34,534	1.22
1980	1,411,064	48.8	1,479,911	51.2	2,890,975	34,527	1.21

Source: "A Preliminary Report of Committee A: Populations and Enrollment Projections," Iowa Cooperative Study of Post High School Education, 1966.

In Table I the slow rate of population gain, slightly better than 1 per cent every five years, can be seen. It is also evident that the increase in the percentage gain every five years is not significant.

Iowa's population is projected to increase from 2,757,537 (actual) in 1960 to 2,890,975 in 1980, an increase of 133,438 in the twenty-year period, and an increase of 101,249 from 1965 to 1980.

As in the nation as a whole, females will continue to outnumber males, and will increase slightly as a proportion of the total to 1970. By actual census count there were over 39,000 more women than men in Iowa in 1960; it is estimated that there will be over 68,000 more women than men in Iowa by 1980 (Table I).

More significant is the fact that Iowa's population, both actual and projected, will tend to be young (Table II). The proportion of Iowa's population under 30 years of age is expected to increase from 50 per cent in 1960 (actual) to 54 per cent in 1980. The increase in population under 30 is significant, as 95 per cent of student enrollments in post high school institutions throughout the country are in this age group.[2]

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[1] Projections of Iowa's population were made by Jon Doerflinger, Iowa State University. A more detailed presentation of his projections and methodology is found in "A Preliminary Report of Committee A: Population and Enrollment Projections," Iowa Cooperative Study of Post High School Education, The University of Iowa, Iowa City, Iowa, 1966.

TABLE II
PER CENT OF AGE GROUPS, 0-29, 30-59, 60 AND OVER
IN THE PROJECTED POPULATION OF IOWA, 1965, 1970,
1975, 1980

Year	0-29	30-59	60 and Over
1960	50%	34%	16%
1965	51	32	17
1970	52	31	17
1975	53	30	17
1980	54	29	17

Source: "A Preliminary Report of Committee A: Population and Enrollment Projections," Iowa Cooperative Study of Post High School Education, 1966.

Of particular interest is the 18-21-year-old age group which generally provides about two-thirds of the college enrollment.[2] In Iowa the 18-21-year-olds are projected to increase from 137,196 in 1960 to 187,414 in 1980 - an increase of 50,218, or about 37 per cent (Table III).

TABLE III
POPULATION PROJECTIONS IN IOWA 18-21 AGE GROUP
FOR 1965, 1970, 1975, 1980

	18-21	% of Total
1960	137,196	4.97
1965	155,078	5.55
1970	181,534	6.43
1975	184,517	6.45
1980	187,414	6.48

Source: "A Preliminary Report of Committee A: Population and Enrollment Projections," Iowa Cooperative Study for Post High School Education.

Contributing in greatest measure to Iowa's relatively slow population growth is the out-migration of people from Iowa. In each of the decades since 1920, Iowa has lost more than half of its natural increase (the excess of births over deaths) through a net migration out of the state. Table IV indicates the extent of out-migration between 1920 and 1960. It is interesting to note that 57 per cent of the total out-migration from 1950 to 1960 was in the 0-30 age group, and the 20-24 age group accounts for the greatest out-migration of any five-year age group. Although Iowa is growing most rapidly in the 0-30 age group, it is also losing the greatest number of people through migration from that age group.

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[2] Allan Cartter and Robert Farrell, "Higher Education in the Last Third of the Century," Education Record, Spring, 1965.

While the population of the state has stabilized in a slow growth pattern since 1900, this has not been the case for individual counties. More than half (fifty-eight) of Iowa's counties lost population during the period 1950-1960, and the only counties that gained 10 per cent or more are either metropolitan complex counties or those adjacent to metropolitan complex counties (Figure 1).

The shifts in population which have occurred in Iowa may be viewed as a phenomenon of metropolitanization. Changes in transportation, the scale of the agricultural-industrial mix, and the retail distribution system have caused Iowa's population to concentrate around the larger cities in the state. The dominant feature of this new pattern is the large metropolitan center or central city of 50, 000 or more population. Such a center or centers, plus the surrounding county or counties that are interdependent with the center, form a metropolitan complex designated by the Census Bureau as a "Standard Metropolitan Statistical Area" (SMSA).

Figure II illustrates the location of Iowa's metropolitan areas and indicates the 1950-to-1960 growth of the central cities as well as the growth which took place in the remainder of the metropolitan county. The metropolitan complexes presently contain about a third of the state's population and obviously influenced population growth beyond their own boundaries, for the central cities themselves gained population more slowly than the remaining areas of the metropolitan complex counties around the central cities.

TABLE IV
TOTAL POPULATION, NATURAL INCREASE AND NET MIGRATION, IOWA BY DECADES 1920 - 1960

Decades	1 Actual population at beginning of Decade	2 Excess of births over deaths during decade (Natural Increase)	3 Potential Population	4 Actual population at end of Decade	5 Number (4-3)	6 Net migration for decade as percentage of actual population at beginning of decade (5 ÷ 1)	7 Net migration as a percentage of the natural increase (5 ÷ 2)
1920-1930	2, 404, 021	228, 336	2, 632, 357	2, 470, 939	-161, 418	-6.7	-70. 7
1930-1940	2, 470, 939	171, 494	2, 642, 433	2, 538, 268	-104, 165	-4. 2	-60. 7
1940-1950	2, 538, 268	280, 750	2, 819, 018	2, 621, 073	-197, 945	-7. 8	-70. 5
1950-1960	2, 621, 073	365, 071	2, 986, 144	2, 757, 537	-228, 607	-8. 7	-64. 4

Sources: U. S. Census of Population.
Division of Vital Statistics, Iowa, Department of Health, Des Moines, Iowa.
National Office of Vital Statistics, Department of Health, Education, and Welfare.

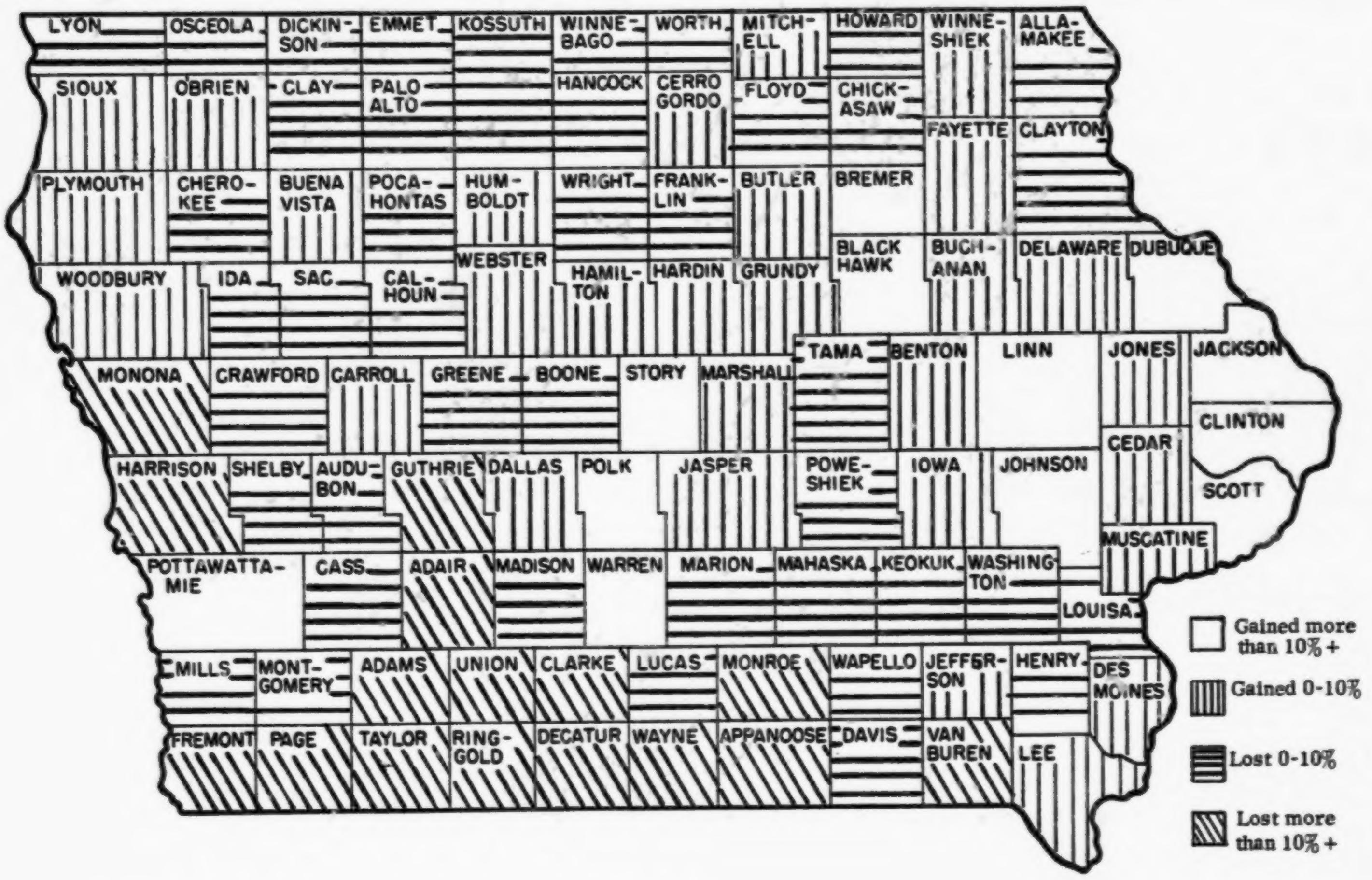

FIGURE 1

PER CENT CHANGE IN TOTAL POPULATION OF IOWA COUNTIES 1950-1960
(FROM U.S. CENSUS 1960)

The population change from 1950 to 1960 of the incorporated places included within a twenty-five mile radius of the central cities in Iowa is presented in Figure III. The greatest growth among these areas occurred around Des Moines, which experienced a 68.9 per cent increase in population from 1950 to 1960. One can safely say that a similar growth phenomenon is occurring around central cities of less than metropolitan size.

The SMSA's will account for increasingly greater proportions of Iowa's population in the future. Table V presents a projection of the state's population in SMSA's based on the years 1950 to 1980. New counties will undoubtedly be added to the SMSA category after the 1970 and 1980 censuses as more cities reach 50,000 population in Iowa. It is probable, therefore, that approximately half of Iowa's population will reside in SMSA's by 1980.

Since eleven of Iowa's twenty-four largest cities[3] (1960 census) were in SMSA counties, and six more were in adjacent counties, it seems clear that Iowa's population will be concentrated to a larger degree approximately where it is now. Additional SMSA

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[3] Ames, Bettendorf, Boone, Burlington, Cedar Falls, Cedar Rapids, Clinton, Council Bluffs, Davenport, Des Moines, Dubuque, Ft. Dodge, Ft. Madison, Iowa City, Keokuk, Marion, Marshalltown, Mason City, Muscatine, Newton, Oskaloosa, Sioux City, Waterloo, West Des Moines.

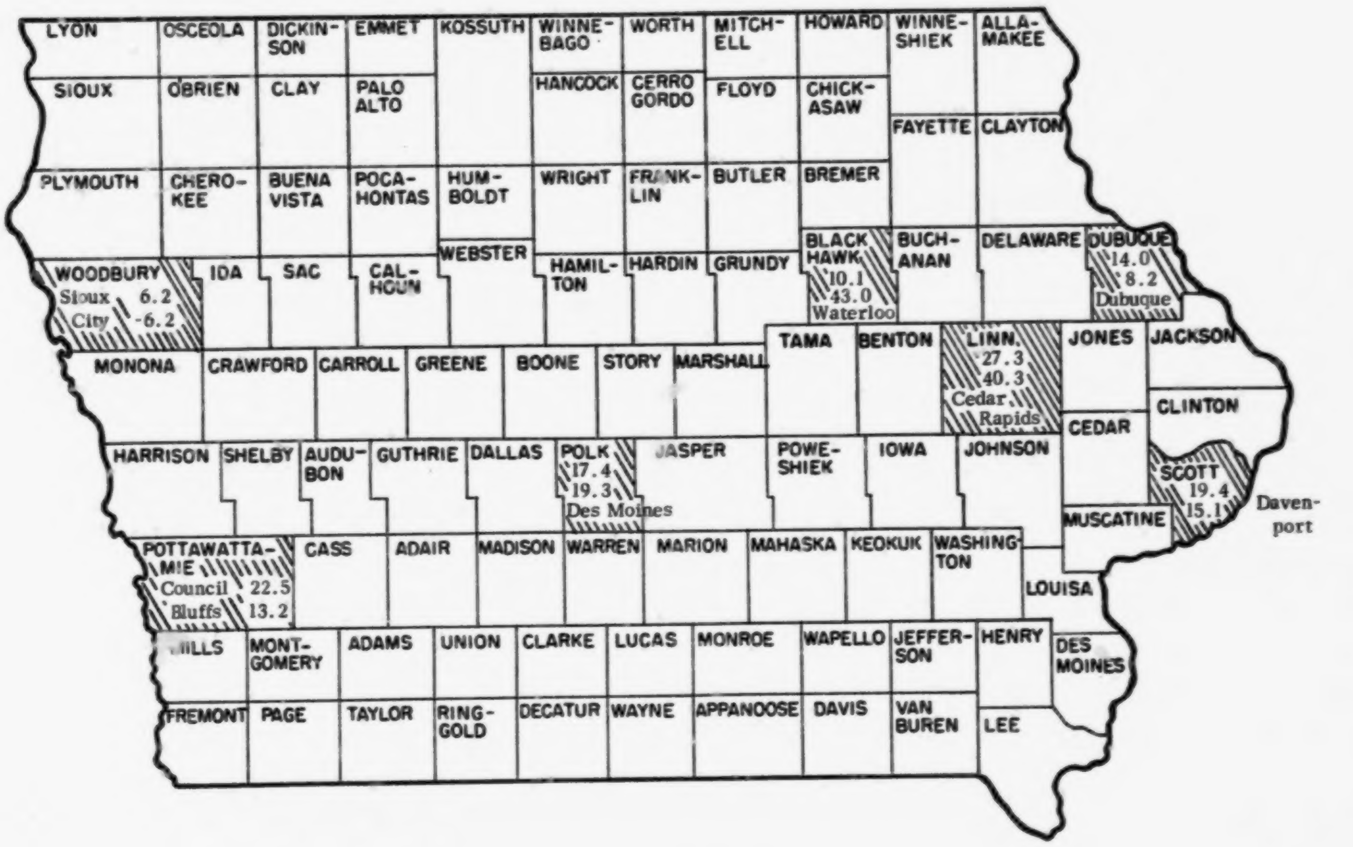

FIGURE II

CHANGE IN POPULATION 1950-1960 IN IOWA SMSA CENTRAL CITIES AND THE REMAINDER OF EACH SMSA COUNTY, EXCLUDING CENTRAL CITY (FROM U.S. CENSUS 1960)

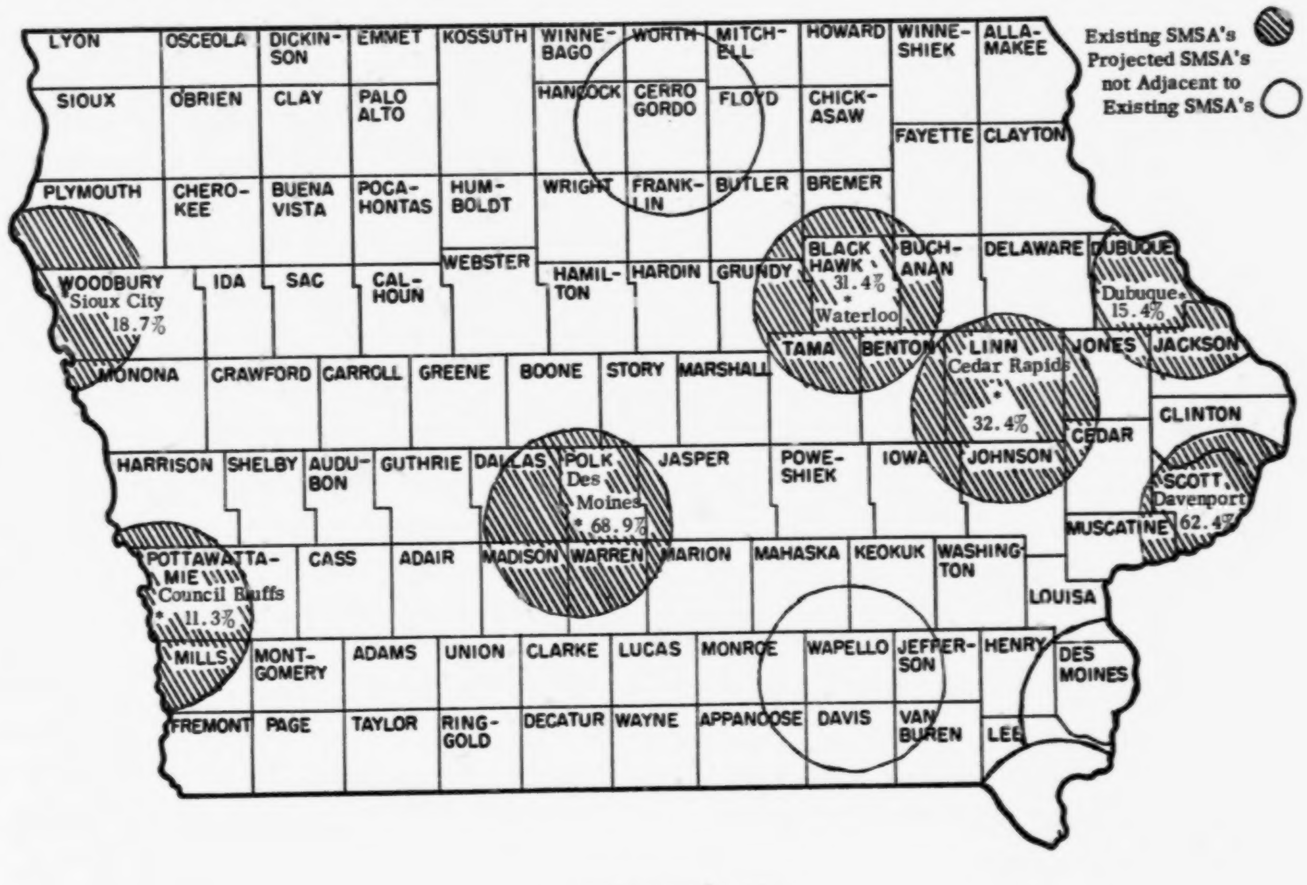

FIGURE III

GROWTH OF INCORPORATED PLACES WITHIN 25-MILE RADIUS OF CENTRAL CITIES IN STANDARD METROPOLITAN STATISTICAL AREAS 1950-1960, EXCLUDING CENTRAL CITIES (FROM U.S. CENSUS 1960) counties by 1980 not adjacent to present SMSA's might be Lee, Des Moines, Wapello, and Cerro Gordo. The population thus tends to shift to the eastern part of the State.

Conclusions. Although Iowa's total population will not grow rapidly, the student age group will grow significantly in the next fifteen years. Moreover, as new institutions and programs are provided, it is reasonable to assume that a greater proportion of the 18-21-year-old group, and even the 18 -30 age group, will take advantage of post-high school opportunities.

Recognition in post high school program planning should be given to the large number of females in Iowa's population.

TABLE V
PROPORTION OF IOWA'S POPULATION IN CURRENT STANDARD METROPOLITAN STATISTICAL AREAS

1950-1960

Year	% in SMSA
1950*	29.3
1960*	33.2
1970**	37.5
1980**	42.7

*Actual

**Hamilton-Perry Projections. These projected proportions are based upon current SMSA counties. New counties will undoubtedly be added to the SMSA category after the 1970 and 1980 census. The proportion of SMSA population in Iowa will thus be greater than 42.7 per cent in 1980, with a good probability that at least 50 per cent or more of the population will be residing in a standard metropolitan statistical area.

As opportunities for post high school training are made available to greater numbers of Iowa youth, out-migration of young people may be reduced. With a properly trained work force, industry may be attracted and jobs made available to retain more Iowa young people. The total result could well be a more rapid growth of Iowa's population than estimated herein.

The most critical finding of the population survey is the projected geographic distribution and concentration of the population. Half of Iowa's population will be found in metropolitan areas, and half will be found in sparsely settled rural areas. Although population concentration will in part facilitate the provision of post high school education, it will also present problems as provision must also be made for the sparsely settled sections of the state.

The concentration of Iowa's population in metropolitan centers along each border, but particularly along the eastern border, may also suggest the desirability of cooperation across lines in the provision of some educational services.

CHAPTER IV

THE POST HIGH SCHOOL STUDENT

With the emergence of new programs and institutions, and the extension of institutional services, the variety of people being served by post high school education has become so great it is nearly impossible to speak of a "typical" post high school student.

As colleges provide programs for the gifted high school junior or senior, and the extension divisions of colleges and universities provide state-wide courses, conferences, and workshops, and the community colleges and other post high school institutions run programs almost the clock around, the characteristics of students served become barely distinguishable from the characteristics of the society as a whole.

Ages of students range from 16 to 60 or more, as sons, daughters, mothers, fathers, grandmothers, and grandfathers avail themselves of advanced-standing courses, degree-credit and non-degree-credit programs, refresher courses, retraining programs and programs to upgrade skills, professional and graduate programs, and courses and programs to expand interests and leisure-time activities.

The majority of post high school students, however, are still those who come directly from high school graduation, or shortly thereafter. This group of students makes up more than two-thirds of the student enrollments, and, consequently, is usually considered as the base group when investigating characteristics of post high school students.

Although some of the characteristics discussed will relate to the total student body, most of the information reported will be drawn from studies of the plans and behavior of high school seniors. Although this reflects only a portion of those who are enrolled or will enroll in post high school programs and institutions, the size of the group and its dominant proportion of the total enrollment gives it significance.

Educational Aspiration and Attainment of Iowa Youth

According to data gathered by the State Department of Public Instruction, eighty-five of every one hundred persons who enter kindergarten in Iowa will graduate from high school.

Analysis of those who graduate from Iowa high schools indicates that fifty-eight of every one hundred who graduate from high school will continue in some form of post high school education, while forty will seek and find immediate employment, and two will be unemployed.

Of those fifty-eight continuing their education, thirty-three enroll in a four-year college, twelve enroll in a junior or community college, nine enroll in a business or technical school, and four enter some other formal post high school training program.

Only twenty-eight of the forty-five who enter a two-year or four-year college will graduate, but of those twenty-eight, twenty will seek education beyond the baccalaureate degree.

Figure 1 is a representation of the educational and employment paths of Iowa high school graduates.

Data collected by the Iowa Educational Information Center in its "Card Pac" survey of high school seniors in Iowa reveal that almost all (94 per cent) of the high school seniors aspire to some post high school education, but as indicated earlier, only 58 per cent, or little more than one-half, attain such training.

The same survey revealed that 61 per cent of Iowa's high school seniors aspire to some college training, but it has been shown that only 45 per cent of Iowa's high school graduates enter two-year or four-year colleges.

These data suggest that about 36 per cent of Iowa's high school seniors fail to achieve the post high school training they aspire to, and 16 per cent do not enroll in the level of education they desire.

Obviously, it is unrealistic to assume that all high school graduates should continue their formal education. Indeed, some have no desire to continue, and some, in terms of their abilities, could not profit from advanced post high school education. Nevertheless, every effort must be made to provide post high school institutions offering programs commensurate with the abilities and aspirations of those desiring post high school training.

Little information is available on those who don't go on to some form of post high school education upon graduation from high school, but undoubtedly many of them eventually enter post high school training programs, increasing the numbers suggested above. Nor is much information available on the reasons why more don't seek post high school training. For the women marriage is an important factor, and for the men military service will postpone if not replace formal post high school training, but significant numbers are still unaccounted for.

If education is considered as one of the necessary steps in the development of individual talent and hence the development of society, the first loss of manpower resources through underdevelopment results when 15 per cent of Iowa's youth fail to graduate from high school. While the 15 per cent school dropout rate is not bad nationally, data indicates that 53 per cent of all Iowans over 25 have less than a high school education. Thus, further underdevelopment of manpower continues as additional persons fail to attain education and training congruent with their abilities and aspirations.

Barriers to Post High School Training

An examination of factors limiting the realization of post high school aspirations suggests the greatest discrepancy is for children coming from lower and middle socioeconomic level homes.

By relating the IEIC data with the occupational categories of the U.S. Department of Labor, and using median Iowa income figures from the 1960 U.S. Census of Population, a rank order of occupational groups by median income was obtained. Obviously there is a great overlap of income between occupational categories, but the categories do give a

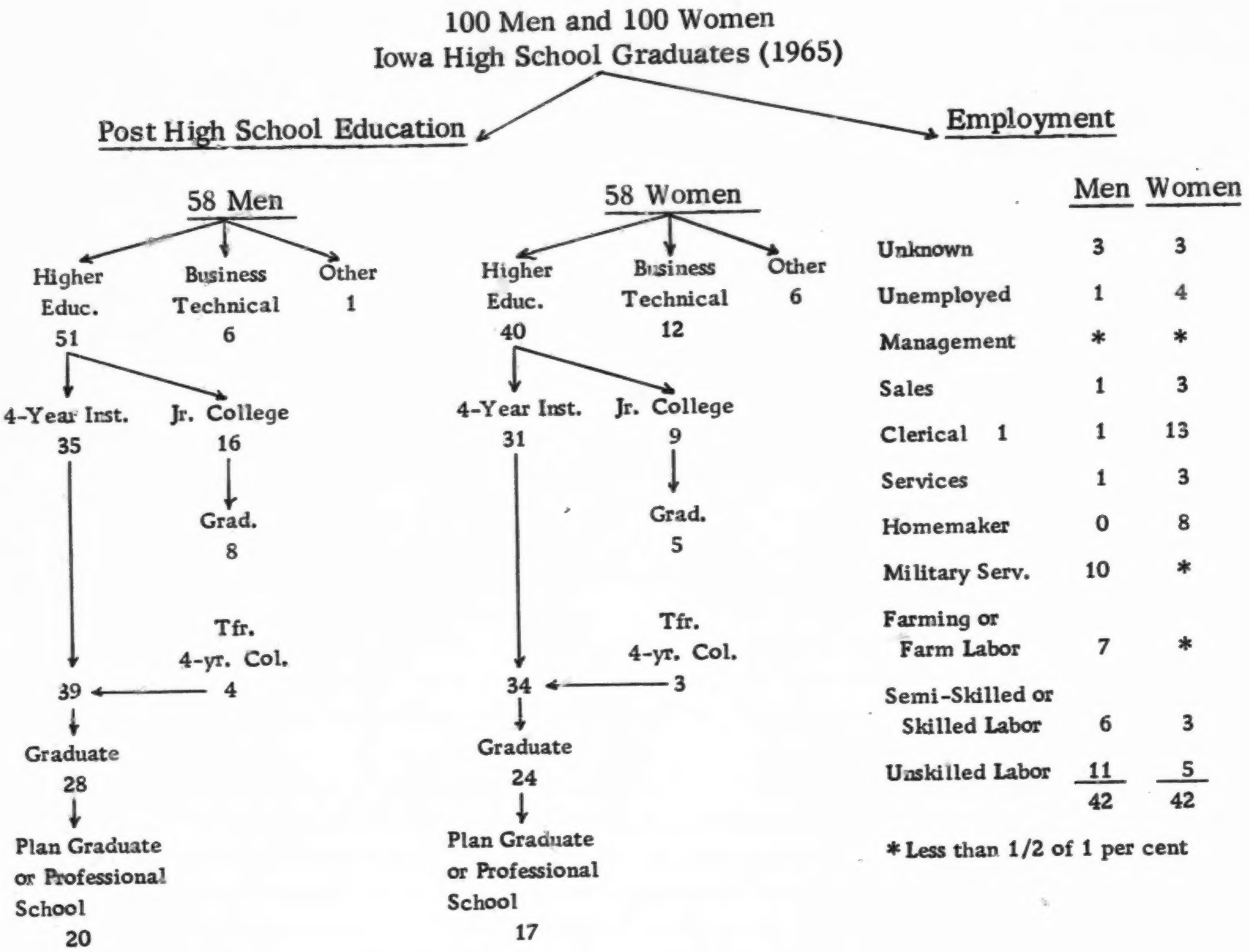

Figure 1

Education and Employment of 100 Men and 100 Women High School Graduates

Source: "A Preliminary Report of Committee B: Student Characteristics," Iowa Cooperative Study of Post High School Education, The University of Iowa, Iowa City, Iowa, 1966.

fair representation of the median income of all Iowans in the seven occupational categories. Table I lists the seven occupational categories and median income of Iowans in each category and indicates large natural breaks in median incomes between professional-technical and craftsmen-foremen, and between operatives-laborers and service workers, suggesting a high, middle, and low income grouping.[1]

An analysis of the "Card Pac" question concerning educational aspirations of high school seniors[2] in comparison with a question on their educational expectations[3] reveals little difference and no pattern among the occupational categories and the per cent of high school seniors who aspire to some form of post high school training, either in on-the-job or technical training or college. Between 92 and 97 per cent of students in all groups aspire to post high school training. Table II is a summary of the responses of 37,398 Iowa high school seniors to educational aspirations, grouped by the occupational category of their fathers.

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[1] The suggested high, middle, and low income groupings are representative of Iowa incomes only and do not correspond to national or standard socio-economic groupings.

[2] The question: "If it were left to your choice, and you could afford it, which one of the following statements best describes the highest level of education you would try to attain?"

[3] The question: "Realistically, considering your abilities, your financial resources, family problems, etc., what is the highest level of education you expect to attain?"

From Table II, however, it is clear that there is a pattern and difference in the expected realization of those aspirations. A significant difference exists between aspiration and expectation of post high school training among students whose fathers are in the upper income categories and those whose fathers are in the low income categories, and, with the exception of the sales and clerical occupational category, the same difference holds for the upper and the middle income categories.

TABLE I

OCCUPATIONAL CATEGORY AND MEDIAN INCOME OF IOWANS

	Occupational Category	Median Income	Income Group[1]
1.	Managers and Proprietors	$6,200	High
2.	Professional and Technical	5,877	High
3.	Craftsmen and Foremen	4,807	Middle
4.	Sales and Clerical	4,743*	Middle
5.	Operatives and Laborers	4,188*	Middle
6.	Service Workers	2,899	Low
7.	Farm Owners and Managers	2,727	Low

Source: United States Census of Population, 1960. Iowa: Detailed Characteristics
U.S. Department of Commerce, Bureau of the Census, Washington, D.C.

(1) Groups representative of Iowa only and not corresponding to national or standard socio-economic groups.

* Two separate occupational categories combined into one category with the median income weighted to recognize the median income and size of each category.

More specifically, matching the aspirations against expectations for college attendance by upper, middle, and lower income groups gives a similar result. In this instance, however, a difference in aspiration is apparent among the three income groups, although Sales and Clerical again prove an exception to a definite difference and pattern between upper and middle income groups. It can be noted that the students whose fathers are in the upper income group aspire to college in a greater per cent (78 and 86 per cent) than do those in the middle (60, 77, and 52 per cent) and lower (68 - 59 per cent) income

TABLE II

EDUCATIONAL ASPIRATIONS AND EXPECTATIONS OF IOWA HIGH SCHOOL SENIORS BY FATHERS' OCCUPATIONAL CATEGORY (1965)

	Aspirations (A) and Expectations (E) of High School Seniors					
	All Post High School Training			Some College Training		
Occupational Category	A	E	Diff.	A	E	Diff.
Managers and Proprietors	96%	92%	- 4	78%	70%	- 8
Professional and Technical	97	96	- 1	86	83	- 3
Craftsmen and Foremen	93	81	-12	60	46	-14
Sales and Clerical	97	90	- 7	77	67	-10
Operatives and Laborers	92	71	-21	52	35	-17
Service workers	96	81	-15	68	52	-16
Farm Owners and Managers	92	80	-12	59	46	-13

Source: Iowa Educational Information Center, "Card Pac" Data.

occupational categories, and that a greater per cent expect to realize those aspirations in the upper income categories (70 and 83 per cent) than in the middle (46, 67, 35 per cent) and lower groups (52 and 46 per cent).

Although the above is but a rough approximation of the influence family socio-economic status has on the education of children, it does support the rather widely held hypothesis that there are financial restrictions to college attendance and to the obtaining of post high school education.

With regard to finances and the obtaining of a post high school education, "Card Pac" data suggests that 48 per cent of the students will rely on working or borrowing money to finance their education, while only 23 per cent will rely on parents, scholarships, and savings. Of those aspiring to some college or junior college experience, 44 per cent expect to work or borrow, and of those aspiring to college graduation and work beyond the baccalaureate degree, 62 per cent expect to work for or borrow the money necessary.

Closely related to financial resources available to the post high school aspirant are certain other socio-economic factors which might retard or encourage his seeking further training. One of these is the value the family places on education as measured by the education attained by the parents. For purposes of illustration, the aspirations of Iowa high school seniors was matched against the education of their fathers. As the post high school training of the father increased, the educational aspiration of the student increased. While 49 per cent of the students whose fathers had less than a high school education aspire to college work, 68 per cent of students whose fathers had high school diplomas and 91 per cent of students whose fathers had college degrees aspire to college training. It is also apparent that students whose fathers have less than college educations tend to choose vocational-technical training and junior college training to a greater degree than do the others.

On a broader scale, an equation predicting college attendance by county in Iowa was determined which indicated that the proportion of high school graduates enrolling in higher education, which varies from 18 per cent in one county to 66 per cent in another, was positively related to the extent or urbanization of the county, the average amount of money spent on education per pupil, the median number of years of education completed by those 25 years of age and older, and the average estimated income per household in the county.

Although one cannot assume a cause and effect relationship from the foregoing, it is not in error to conclude that certain societal factors will influence, positively or negatively, college attendance rates.

One last factor which should have an influence on those who seek post high school training is ability. Data obtained from the IEIC survey indicate that those seeking higher education are average or above in ability-achievement status compared to those seeking other education or employment, and Feldt and Forsyth conclude: "It seems clear that the able high school senior perceives a college education as highly desirable."[4]

Table III provides a summary of the high school achievement and education and employment of Iowa high school graduates.

Eighty per cent of those seeking four-year college experience are in the upper half of their high school class, and 50 per cent and 40 per cent of the groups seeking junior college work and business, technical, or trade school experience, respectively, are in the upper half of their high school class.

Among those employed, 25 per cent were in the upper half of their high school class, and 20 per cent of the unemployed were in the upper half of their high school class. It is in these two groups that students in both the upper and lower half of their classes must be made aware of the programs and alternatives available to them in post high school institutions.

Fortunately, some of the limitations to obtaining post high school training are such that they can be partially overcome by proper counseling of both student and parent and the extension of quality, low-cost educational opportunities in proximity to the student.

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[4] Leonard S. Feldt and Robert A. Forsyth, "The Relationship of ITED Composite Score To the Expectations, Aspirations, Activities, and Sociological Characteristics of Iowa High School Students," Iowa Testing Programs, The University of Iowa, Iowa City, Iowa, 1966.

TABLE III

HIGH SCHOOL ACHIEVEMENT AND EDUCATION AND EMPLOYMENT OF IOWA HIGH SCHOOL GRADUATES (1965)

	Per cent in Upper 50% of H.S. Class	Per cent in Lower 50% of H.S. Class
Four-Year College	80	20
Junior College	50	50
Business, Technical, or Trade School	40	60
Employed	25	75
Unemployed	20	80

Source; "A Preliminary Report of Committee C: Student Characteristics, " Iowa Cooperative Study of Post High School Education, The University of Iowa, Iowa City, Iowa, 1966.

Where Do Students Get Their Post High School Training?

The most current data available on "where" most Iowa students get their post high school training is a 1963 study done by the United States Office of Education.[5] According to that survey, 74.2 per cent of all Iowa students enrolled somewhere are to be found in Iowa colleges and universities (Table IV). About 76 per cent of the Iowa students attending public institutions choose Iowa public colleges, and about 72 per cent of Iowans attending private institutions do so in Iowa.

Similarly, 76 per cent of Iowa undergraduate students, 61.6 per cent of Iowa's first professional students with preprofessional training, and 58.9 per cent of Iowa students enrolled in graduate work or work beyond the first professional degree remain in Iowa to take their training. Nationally, about 80 per cent of undergraduate and 73 per cent of graduate students remain in their home state for their training, suggesting Iowa keeps fewer than its share of "home" students.

Considering, for the moment, only those Iowa students who stay in Iowa to take their post high school training, about 60 per cent enrolled in public institutions and 40 per cent in private. Public four-year colleges enroll about 57 per cent of the Iowa students attending four-year institutions in Iowa, while the private institutions enroll about 43 per cent. Public junior-community colleges enroll about three-fourths of the Iowa students attending Iowa two-year institutions. All two-year colleges accounted for only 14 per cent of the Iowa students in Iowa in 1963. More current data on Iowa enrollments would indicate that the per cent of Iowa students in Iowa two-year colleges had increased in the last three years.

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[5] "Residence and Migration of College Students," U.S. Dept. of Health, Education, and Welfare, Office of Education, (Washington, D.C., 1964).

TABLE IV

LOCATION OF IOWA STUDENTS IN POST HIGH SCHOOL INSTITUTIONS (1963)

Iowa Students Enrolled in Fall 1963	In Iowa		Out of Iowa		Total	
	No.	%	No.	%	No.	%
Public						
Four-Year	21,821	74.1	7,636	25.9	29,457	100
Two-Year	4,627	85.5	783	14.5	5,410	100
Total	26,448	75.9	8,419	24.1	34,867	100
Private						
Four-Year	16,291	70.8	6,734	29.2	23,025	100
Two-Year	1,572	85.3	271	14.7	1,843	100
Total	17,863	71.8	7,005	28.2	24,868	100
Total All Iowa Students	44,311	74.2	15,424	25.8	59,735	100
Undergraduates						
Public	23,259	77.1	6,928	22.9	30,287	100
Private	16,895	74.5	5,769	25.5	22,664	100
Total	40,254	76.0	12,697	24.0	52,951	100
1st Professional						
Public	1,151	88.7	147	11.3	1,298	100
Private	206	22.8	698	77.2	904	100
Total	1,357	61.6	345	38.4	2,202	100
Graduate						
Public	1,938	59.0	1,344	41.0	3,282	100
Private	762	58.6	538	41.4	1,300	100
Total	2,700	58.9	1,882	41.1	4,582	100
Total All Iowa Students	44,311	74.2	15,424	25.8	59,735	100

Source: "Residence and Migration of College Students," U.S. Office of Education, Washington, D.C., 1964.

Public institutions enroll 58 per cent of the Iowa undergraduates, 84.8 per cent of the Iowa first professional students, and 71.8 per cent of the Iowa graduate students who attend Iowa institutions.

Iowa students who left Iowa to attend college tended to migrate in the largest number to the Plains states (Nebraska, Kansas, Missouri, North Dakota, South Dakota, and Minnesota), as shown by Table III.

Iowa, however, attracted 6,608 more students from other states to its colleges and universities than left Iowa to attend college, drawing large numbers of students from the Great Lakes Region (Illinois, Indiana, Michigan, Ohio, Wisconsin), the Mideast (Delaware, District of Columbia, Maryland, New Jersey, New York, Pennsylvania), and

TABLE V

IOWA STUDENTS ENROLLED IN IOWA POST HIGH SCHOOL INSTITUTIONS (1963)

Iowa Students Enrolled in Fall 1963	Public No.	Public %	Private No.	Private %	Total No.	Total %
Four-Year	21,821	57.3	16,291	42.7	38,112	100
Two-Year	4,627	74.6	1,572	25.4	6,199	100
Total	26,448	59.7	17,863	40.3	44,311	100
Undergraduate	23,359	58.0	16,895	42.0	40,254	100
1st Professional	1,151	84.8	206	15.2	1,357	100
Graduate	1,938	71.8	762	28.2	2,700	100
Total	26,448	59.7	17,863	40.3	44,311	100

Source: "Residence and Migration of College Students," U.S. Office of Education, Washington, D.C., 1964.

TABLE VI

MIGRATION PATTERNS OF STUDENTS INTO AND OUT OF IOWA (1963)

Area	Into Iowa	Out of Iowa	Net Migration
New England	633	379	+ 254
Mideast	2,845	463	+2,382
Great Lakes	10,656	3,118	+7,538
Plains	48,346	52,943	-4,597
Southeast	718	407	+ 311
Southwest	435	670	- 235
Rocky Mountains	562	733	- 171
Far West	908	833	+ 75
Foreign and Other	1,240	189	+1,051
TOTAL NET MIGRATION	66,343	59,735	+6,608

Source: "Residence and Migration of College Students," U.S. Office of Education, Washington, D.C., 1964.

foreign countries and territories (Table VI).

As a result of the in-migration of students from other states to attend Iowa institutions of post high school education, non-Iowans accounted for about one-third of all students in all Iowa institutions in 1963. In public institutions, out-state students were only 23.2 per cent of the total enrollments, and 44 per cent of the private college students came from outside of Iowa.

Although non-residents of Iowa account for only 30.8 per cent of the total undergraduate enrollments, they comprise 40.9 per cent of the first professional students in Iowa. At the graduate level, more than half, 53.9 per cent of the students in Iowa institutions are non-residents.

Factors Influencing Selection of Post High School Training

Where students choose to go to college and the factors influencing that decision are difficult to isolate. There is evidence to indicate, however, that proximity is a factor in the choice of public junior colleges. Iowa public junior colleges drew 90 per cent of

TABLE VII

IOWANS AND NON-IOWANS IN IOWA POST HIGH SCHOOL INSTITUTIONS

All Students Enrolled in Fall 1963	Iowans		Non-Iowans		Total All Students	
	No.	%	No.	%	No.	%
Public						
Four-Year	21,821	73.8	7,764	26.2	29,585	100
Two-Year	4,627	95.7	210	4.3	4,837	100
Total	26,448	76.8	7,974	23.2	34,422	100
Private						
Four-Year	16,291	55.1	13,311	44.9	29,602	100
Two-Year	1,572	67.8	747	32.2	2,319	100
Total	17,863	56.0	14,058	44.0	31,921	100
Total All Students	44,311	66.8	22,032	33.2	66,343	100
Undergraduates						
Public	23,359	83.9	4,488	16.1	27,847	100
Private	16,895	55.7	13,435	44.3	30,330	100
Total	40,254	69.2	17,923	30.8	58,177	100
1st Professional						
Public	1,151	75.8	368	24.2	1,519	100
Private	206	26.4	573	73.6	779	100
Total	1,357	59.1	941	40.9	2,298	100
Graduate						
Public	1,938	38.3	3,118	61.7	5,056	100
Private	762	93.8	50	6.2	812	100
Total	2,700	46.1	3,168	53.9	5,868	100
Total All Students	44,311	66.8	22,032	33.2	66,343	100

Source: "Residence and Migration of College Students," U.S. Office of Education Washington, D.C., 1963.

their enrollment from within a fifty-mile radius and over half, 55 per cent, from within ten miles. The Regents institutions, on the other hand, drew only a fourth of their students from within a fifty-mile radius, and half from more than fifty miles, suggesting proximity is not as important a factor for those choosing public four-year colleges (Table VIII).

Earlier evidence indicated that socio-economic level had a bearing on the aspiration and expectation of post high school training, and it is also evident that socio-economic level influences the type of post high school training desired. It is again apparent (Table IX) that high school seniors from upper income families choose to seek post high school education at a higher rate than those from middle and lower socio-economic backgrounds, and they choose to attend public and private four-year institutions at greater rates than do the others. It is interesting to note that students from upper income families also plan to attend junior colleges at a greater rate than do students from the other two groups.

Students in both the middle and lower socio-economic level groups choose technical or trade schools first for both high school training and public four-year institutions second. Although the junior college ranks as third choice for these groups, other data suggests that students from the middle and lower socio-economic families enroll in greater numbers at junior colleges than public four-year institutions (Table X).

TABLE VIII

DISTANCE FROM HOME OF STUDENTS IN THREE STATE COLLEGIATE INSTITUTIONS AND SIXTEEN PUBLIC JUNIOR COLLEGES

	Per cent in Each Distance Category				
	0-10 Mi.	11-50 Mi.	51+ Mi.	Out-of-State	Total
State Colleges	10	15	50	25	100
Junior Colleges	55	35	5	5	100
		0-50 Mi.	51+ Mi.	Out-of-State	Total
State Colleges		25	50	25	100
Junior Colleges		90	5	5	100

Source: Charles M. Mason. "A Study of the Matriculation Patterns of the Freshman and Sophomore Students in Public Supported Institutions of Higher Education in Iowa." Unpublished doctoral dissertation, The University of Iowa, Iowa City, Iowa, 1962.

Recognizing that the emerging area community colleges will combine "technical trade" and "junior college" training in one institution, it might be concluded that more students from middle and lower income families would choose to attend the community

TABLE IX

POST HIGH SCHOOL PLANS AND SOCIO-ECONOMIC LEVEL OF HIGH SCHOOL SENIORS (1965)

Socio-Economic Level	Total in Group	Will Not Attend N	Will Not Attend %	Technical or Trade N	Technical or Trade %	Junior College N	Junior College %	Public Four-Year N	Public Four-Year %	Private Four-Year N	Private Four-Year %	No Response N	No Response %
Upper (a)	8,276	1,118	13.6	1,077	13.0	1,294	15.6	2,913	35.2	1,625	19.6	249	3.0
Middle (b)	15,601	5,439	34.9	3,379	21.7	2,404	15.4	2,667	17.1	1,208	7.7	504	3.2
Lower (c)	11,203	3,379	30.2	2,586	23.1	1,412	12.6	2,441	21.8	1,125	10.0	260	2.3
No Response	2,498	369	14.8	161	6.4	115	4.6	120	4.8	60	2.4	1,673	67.0
TOTALS	37,578	10,305	27.4	7,203	19.2	5,225	13.9	8,141	21.7	4,018	10.7	2,686	7.1

a. Includes: Managers and proprietors; professional and technical occupational groups

b. Includes: Craftsmen and Foremen; sales and clerical; operatives and laborers occupational groups

c. Includes: Service workers; and farm owners and managers occupational groups

Source: Iowa Educational Information Center "Card Pac," The University of Iowa, Iowa City, Iowa, 1966.

TABLE X

SOCIAL CLASS OF STUDENTS ENROLLED AT EACH TYPE OF COLLEGE

Social Class	State Inst.	Private Four-Year	Junior Colleges	Out-of State
	Per cent in Social Class			
Upper	10	10	0	15
Middle	80	75	75	65
Lower	10	15	25	20
	100	100	100	100

Source: Charles M. Mason. "A Study of the Matriculation Patterns of the Freshmen and Sophomore Students in Public Supported Institutions of Higher Education in Iowa." Unpublished doctoral dissertation, The University of Iowa, 1962.

college than would those from the upper income groups.

Ability also appears to be a factor in selection of post high school training. Admission requirements, of course, enforce a certain amount of selectivity at the various institutions and undoubtedly help the student determine the institution or training he will seek.

According to data collected for this Study on the high school rank of entering, first-time, full-time freshmen, the Regents institutions (Iowa, Iowa State, and State College of Iowa) as a group attracted a greater number and per cent of students who graduated in the upper quarter and upper half of their high school class than either the private four-year colleges or the public two-year colleges (Table XI).

More than half, 55.9 per cent, of freshmen entering public four-year institutions in Iowa (fall, 1964) were in the upper quarter of their class, and 90.1 per cent graduated in the upper half of their class. At private institutions, as a group, 77.7 per cent of the entering freshmen in the fall of 1964 were in the upper half of their high school class, although some individual private institutions had considerable more entering freshmen in the upper quarter and upper one-half of their high school classes than the Regents institutions. Half, 50.3 per cent, of freshmen entering public junior colleges were in the upper half of their high school class.

It is interesting to note that ability levels of entering freshmen did not change appreciably between 1960 and 1964, suggesting that colleges did not attempt to sidestep rapidly increasing enrollments by raising admission standards.

Retention of Students in College

Regardless of the average level of ability of students admitted to Iowa colleges, only one-half of them graduate from the two-year or four-year college they enter, approximating the dropout rate of the nation as a whole. Obviously some students who drop out will re-enter in another institution and complete programs, but the large number who start and never finish should be carefully studied from both the point of institutional failure in providing for the student and from the point of student persistence.

In four-year undergraduate programs, 26.3 per cent of the freshmen who entered Regents institutions in the fall of 1960 attended one year or less, and 29 per cent of freshmen in private four-year institutions dropped out after one year (Table XII).

After two complete years, 39.9 per cent of the freshmen who entered public four-year institutions had left, and 47 per cent of those entering private institutions had left.

About 42 per cent of the entering freshmen, fall 1960, graduated from the Regents institutions within four years and, assuming all of those still in attendance (6.6 per cent) after four years will graduate, a total of 48.4 per cent of the entering class graduated. In the private institutions 42.6 per cent graduated within four years and, including the 1.6 per cent still in attendance, the total reaches 44.2 per cent. An additional 10 per cent can probably be added to the graduation figures to include students who finish programs at other colleges, according to national patterns.

In junior colleges, 46.1 per cent and 52.8 per cent of the students entering public and private two-year colleges respectively, fall 1960, graduated or completed programs (Table XIII). Better than half of Iowa junior college students transfer, 58.5 per cent from public and 54.5 per cent from private, with about two-thirds of the transfers

TABLE XI

HIGH SCHOOL RANK OF ENTERING, FIRST-TIME, FULL-TIME FRESHMEN, 1960, 1964

	Upper Quarter		Second Quarter		Third Quarter		Low Quarter	
1960	N	%	N	%	N	%	N	%
Regents Institutions (a)	2,688	52.9	1,650	32.4	627	12.3	123	2.4
Private Four-Year Colleges (b)	1,866	46.4	1,272	31.7	683	17.0	197	4.9
Public Junior Colleges (c)	209	23.0	264	29.1	272	30.0	163	17.9
1964								
Regents Institutions (a)	3,493	55.9	2,133	34.2	551	8.8	67	1.1
Private Four-Year Colleges (b)	2,249	46.6	1,498	31.1	812	16.8	263	5.5
Public Junior Colleges (c)	470	21.3	639	29.0	703	31.9	394	17.9

a. The University of Iowa, State College of Iowa, Iowa State University

b. Based on 15 of 25 colleges

c. Based on 8 of 15 junior colleges

Source: "A Preliminary Report of Committee B: Student Characteristics," Iowa Cooperative Study of Post High School Education, The University of Iowa, Iowa City, Iowa, 1966.

coming at the completion of the program. Of those who successfully complete the program they enter, about 85 per cent transfer to another college. It appears as though the Iowa junior college served as a terminal program only for those who were unsuccessful in their junior college work.

Although only limited data are available on the success of junior college transfers into four-year institutions in Iowa, what is available suggests that junior college transfers graduate at a much lower rate (62 per cent) than do students at the same level who began their education at the four-year institution (80 per cent). It is not clear whether the lower graduation rate of transfer students is the result of lesser ability or inadequate preparation or individual motivation. However, it is clear that the community colleges and four-year colleges must work to improve this phase of articulation if the transferring student is to be best served.

Conclusions and Implications

Although the establishment and proliferation of educational institutions and programs will provide increased educational opportunities for Iowans, mere provision of opportunities alone will not ensure that individuals will obtain the education of greatest benefit to them. Every effort must be made to inform all Iowans of the post high school opportunities available to them and to help them, student and adult alike, in every manner possible to gain the post high school training commensurate with their ability and skill.

TABLE XII

PERSISTENCE OF FIRST-TIME, FULL-TIME STUDENTS, 1960, IN FOUR-YEAR INSTITUTIONS

	Regents Institutions		Private Four-Year Colleges*	
	N	%	N	%
Entered as first-time, full-time freshmen, fall, 1960	5,340		4,223	
Attended one semester (quarter) or less	388	7.3	322	7.6
Attended not more than one year	1,014	19.0	902	21.4
Attended more than one but not more than two years	728	13.6	759	18.0
Attended more than two but not more than three years	323	6.0	180	4.3
Attended more than three years but did not graduate	269	5.0	185	4.4
Graduated not later than spring session 1965	2,230	41.8	1,798	42.6
Still in attendance subsequent to spring 1965	353	6.6	67	1.6
Not otherwise classified	35	0.7	10	0.2

*Based on 15 out of 25 colleges

Source: "A Preliminary Report of Committee B: Student Characteristics," Iowa Cooperative Study of Post High School Education, The University of Iowa, Iowa City, Iowa, 1966.

The large portion of Iowa's young people and the more than half of Iowa's adult population with less than a high school education who are not finding the post high school training they seek and could profit from, suggests the need for 1) appropriate programs for the lower-ability student, 2) low-cost education and financial assistance for the economically unable, and 3) programs for the retraining or upgrading of adults in the labor force.

Finally, all post high school institutions will have to work together to cooperatively provide the coordinated system of post high school education, which in total will provide all the programs on the continuum of post high school training and allow for the free flow of students from program to program and institution to institution.

TABLE XIII

PERSISTENCE OF FIRST-TIME, FULL-TIME STUDENTS IN TWO-YEAR COLLEGES

	Public Community Colleges (a)	Private Jr. Colleges (b)
	%	%
Entered as first-time, full-time freshmen, fall, 1960 (number)	100.0 (1,137)	100.0 (532)
Attended one semester (quarter) or less	15.2	8.3
Transferred to another school	3.6	1.5
Attended not more than one year	19.0	32.9
Transferred	8.4	11.7
Attended more than one year but not more than two years	14.6	5.3
Transferred	6.1	2.6
Attended more than two years but did not complete program	3.0	0.2
Transferred	1.2	0.0
Graduated or completed program	46.1	52.8
Transferred	39.2	38.7
Not otherwise classified	2.1	0.0
Percentage of total transfers	58.5	54.5

a. Based on 10 of 16 community colleges

b. Based on all 4 private junior colleges

Source: "A Preliminary Report of Committee B: Student Characteristics," Iowa Cooperative Study of Post High School Education, The University of Iowa, Iowa City, Iowa, 1966.

CHAPTER V

ENROLLMENT PROJECTIONS

As with any other public service enterprise, long-range planning in post high school education is dependent upon a reasonably accurate estimate of the number of persons to be served in the future. Facilities, staff, indeed the nature of these services themselves, are dependent upon estimates of the number and nature of future clientele. Projections of future clientele in turn are dependent not only upon the population base from which the clientele will be drawn, but also upon the nature of social, economic, and other factors which might cause persons to avail themselves of the services offered. The most difficult part of any projection is to estimate what additional factors might operate to increase or decrease the rate of people seeking certain services. Those responsible for post high school education must estimate the effect of such factors as new federal legislation and new manpower demands, and other factors influencing not only initial attendance, but length of attendance.

Because of the difficulty in estimating the influence of these social and economic factors, it is not surprising that significantly varying projections of post high school enrollments have been developed in Iowa in the past several years. Projections of Iowa post high school degree credit enrollments in 1980 presented to the staff and directors of the Post High School Study by various advisory groups ranged from 144,000 to 185,000. Each of these projections was based upon the same population base, but each projection made different assumptions about the college attendance rate, and in so doing made implicit assumptions about factors which might affect this rate.

Methodology

The method used in developing the present projections attempts to isolate enrollment trends into their separate, but not necessarily independent, components. For example the projections of public junior college enrollments are made upon the assumption that the major component in these enrollments is the number of new students direct from high school, and that continuing and other students can be estimated as a relatively stable percentage of the entering new freshmen. Separating the total projection into components also allows a more meaningful projection by type of institution, since enrollments for each type of institution are projected by the method best suited to that group of colleges.

Definitions

1. Students Included in the Enrollment Count. The enrollment counts used as a basis for future projections are taken from the third-week fall reports prepared for the Iowa Association of College Presidents and from the State Department reports of vocational-technical enrollments. Students counted, officially, represent a fall semester head count of individuals pursuing a formal program on a part-time or full-time basis. The majority of the figures are for degree credit programs only, and Vocational-Technical students are included only where specifically indicated.

2. Degree Credit Enrollment. A degree credit student is one pursuing work creditable toward a degree at the four-year undergraduate level or beyond. This includes students in less than four-year institutions whose work is in a program designated as transfer in nature, or for which transfer of credit toward a four-year college degree is presumed. This enrollment figure thus excludes students enrolled in "less than baccalaureate degree level programs" and those students enrolled in occasional courses on a non-degree basis.
3. Undergraduate Enrollment. Undergraduate enrollments consist of students enrolled in programs in which the work is of a four-year baccalaureate level and students pursuing first level professional degrees, M.D., D.V.M., D.D.S., etc.
4. Graduate Enrollment. The definition of graduate enrollment follows from that of undergraduate enrollment and includes students enrolled in programs leading to a degree of a post baccalaureate and/or second level professional nature.
5. Vocational-Technical Enrollment. Vocational-technical enrollments are defined as those students pursuing a formal program at least a semester in duration of a less than baccalaureate degree level; i.e., for which transfer credit is not allowed.

Enrollment Trends

Trends in College Attendance Rates

Degree credit enrollment and enrollment rates for 1960-65, and population trends for 18-21-year-olds and for 18-year-olds, are presented in Table 1.

Some reasons for the growth in the total college attendance rate are revealed by these data. The first factor is that graduate enrollments grew faster than undergraduate (64 per cent vs. 47 per cent, 1960-65). Since it is generally agreed that graduate enrollments are likely to be influenced by factors other than those affecting undergraduate enrollments they were subtracted from the total, leaving a total undergraduate degree credit enrollment figure.

With the graduate enrollment growth subtracted, the data in Table 1 show that although total undergraduate enrollment increased 57 per cent from 1960 through 1965, or just slightly more than the new freshman enrollment (56 per cent), the total undergraduate enrollment rate increased almost twice as rapidly as did the new freshman rate (.111/.358 vs. .072/.410). The answer to the question of the differential growth in enrollment rates lies not only in the nature of the enrollment trends, but in the nature of the population base used to calculate the rates. The number of 18-year-olds in Iowa increased by 32 per cent between 1960 and 1965, according to the projections, whereas the number of 18-21-year-olds increased by only 13 per cent because the increase from the post-war "bulge" had just begun to enter the 18-21-year-old count in 1965.

An examination of the differential population growth patterns in Table 1 indicates that reliance on a projected increase in the total college attendance rate would likely result in an over-estimate of college enrollments for future years. The population

TABLE I

IOWA POPULATION 18 AND 18-21-YEAR-OLDS, 1960-1980, TOTAL DEGREE CREDIT ENROLLMENT, TOTAL UNDERGRADUATE ENROLLMENT, FIRST-TIME FRESHMAN ENROLLMENT, AND ENROLLMENT RATES 1960-65

					Enrollment			
	Population		Total		Undergraduate		New Freshmen	
Year	18	18-21	No.	r^1	No.	r^1	No.	r^2
1960	38,798	137,196	54,007	.394	49,090	.358	15,901	.410
1961	38,365	136,132	58,794	.432	53,587	.394	16,756	.437
1962	37,517	137,198	62,181	.453	56,300	.410	16,516	.440
1963	36,203	136,217	66,020	.485	59,665	.438	17,004	.470
1964	45,269	142,813	72,924	.510	66,091	.463	20,256	.448
1965	51,450	155,078	84,948	.548	77,058	.469	24,799	.482
1970	51,980	181,543						
1975	51,639	184,517						
1980	49,625	187,414						

[1] As ratio of 18-21-year-olds.

[2] As ratio of 18-year-olds.

projections show that for all practical purposes the year 1965 represented the leveling point in Iowa's 18-year-old population growth. As these youth become 19 through 21, the 18-21-year-old population will continue to rise through 1968-69. Nevertheless, if as the data suggest, enrollment increases in 1960-65 came more from an increase in the number of 18-year-olds than from an increase in the college attendance rate, it then follows that enrollments may level off substantially as the number of potential new students ceases to increase.

There still should be a substantial increase in enrollments, since the new-student college attendance rate has increased faster than the population itself, but the increase should be less than that projected by other groups in Iowa.

Trends in First-Time Freshman Enrollments

If future projections of total enrollment, particularly undergraduate degree credit enrollment, are more dependent on trends in first-time freshman enrollment than has been assumed, then an analysis of the first-time enrollment itself is in order. (Note: The reference in this section to first-time students always refers to students entering college in the fall directly from high school, no matter what phrase is used. This is not the same as freshman or freshman class, which will include other students who entered previously, and who have not attained sophomore status.)

The data (Table II) indicate that although first-time freshman enrollments increased for all types of institutions, the increase in the first-time freshman enrollment rate

TABLE II

FIRST-TIME FRESHMEN AS RATIO OF 18-YEAR OLDS BY TYPE OF INSTITUTION 1960-1965

			Type of Institution							
			Public 2-year		Priv. 2-year		Public 4-year		Priv. 4-year.	
Year	N	Ratio[1]	N	Ratio	N	Ratio	N	Ratio	N	Ratio
1960	15,901	.410	1,861	.048	973	.025	5,219	.135	7,848	.202
1961	16,756	.437	2,307	.060	1,051	.027	5,705	.149	7,693	.201
1962	16,516[2]	.440	2,501	.066	1,164	.031	5,394	.144	7,457[2]	.199
1963	17,004[2]	.470	2,897	.080	988	.027	5,514	.152	7,603[2]	.210
1964	20,256[2]	.448	3,834	.085	1,173	.026	6,592	.146	8,657[2]	.191
1965	24,799[2]	.482	5,776	.112	1,581	.031	7,708	.150	9,734[2]	.189
% Change										
60-65		.072+		.064		.006		.015		-?-

[1] As ratio of 18-year-olds.

[2] Parsons College did not report freshman enrollment after 1961, nor did Midwestern College which began in 1965. Freshman enrollments are thus slightly understated.

can be accounted for almost entirely by the increase in first-time freshman enrollments in public junior colleges. The 1960-65 increase in the rate for first-time freshman enrollments was .072, while the increase in junior college enrollment rate accounted for .064 of that increase. Thus, if the 18-year-old population stabilized as projected, and if admission policies and programs are not changed substantially, it is quite likely that most of the additional freshman enrollments projected through 1980 will enter public community colleges.

Trends in Total Undergraduate Enrollment

The undergraduate enrollments in Iowa institutions from 1960-65 by type of institution are presented in Table III.

Despite the fact that junior college students are enrolled for no more than two years, or about half the period of the four-year institutions, the public two-year institutions accounted for approximately as great an increase of the college attendance rate as did the public four-year institutions. The increase for the public two-year institutions has been at a positively accelerating rate, while the increase for the public four-year institutions has been at a declining rate compared with the total population base. The four-year institutions, however, should accelerate as the increased numbers of junior colleges students transfer to four-year institutions.

TABLE III

UNDERGRADUATE ENROLLMENT AS RATIO OF 18-21-YEAR-OLDS BY TYPE OF INSTITUTION 1960-1965

			Type of Institution									
	Total		Public 2-year		Private 2-Year		Public 4-Year		Private 4-Year		Professional Colleges	
Year	N	Ratio[1]	N	Ratio	N	Ratio	N	Ratio	N	Ratio	N	Ratio
1960	49,090	.358	3,150	.023	1,586	.012	20,567	.150	23,787	.173	283	.002
1961	53,587	.394	3,815	.028	1,973	.015	22,014	.163	25,785	.189	279	.002
1962	56,300	.410	4,352	.032	2,087	.015	22,809	.166	27,052	.197	281	.002
1963	59,663	.438	4,937	.036	1,952	.014	24,529	.180	28,247	.207	286	.002
1964	66,091	.463	6,257	.044	2,096	.015	26,695	.187	30,727	.215	306	.002
1965	77,058	.469	9,238	.056	2,794	.017	30,288	.184	34,738	.211	308	.002
Change 1960-65		.111		.033		.005		.034		.038		.000
Per cent Change 1960-65		31.0		43.5		15.0		22.7		22.0		

[1] Ratio of enrollment to 18-21-year-olds.

Trends in Junior College Transfers

If the trends in new freshman enrollment continue as projected, most of the additional new freshmen will enter public junior colleges. In order to develop reasonable projections for all institutions, it is necessary to estimate the number of junior college transfers in future years, since these will likely constitute the bulk of the additional new undergraduate students, especially in the public four-year institutions. The transfer data for the three public four-year institutions is presented in Table IV.

The enrollment data for public junior colleges suggest that transfers to public four-year institutions can be calculated as a fairly constant percentage of the junior college freshmen of two years previous. (This is not to say that transfers are only those who entered two years previously, since students transfer during both the first and second year.)

The transfer "rate" to public four-year institutions is about 25 per cent of the junior college new freshmen from two years previously. What little data are available suggest that junior college students do not transfer to private colleges in appreciable numbers. (The total to all private institutions is perhaps 10 per cent of all junior college new freshmen of two years previous.)

Graduate Enrollment Trends

The graduate enrollments in Iowa institutions by type of institution from 1960-65 are presented in Table V.

TABLE IV

PUBLIC JUNIOR COLLEGE TRANSFERS TO REGENTS INSTITUTIONS AS PER CENT OF PUBLIC JUNIOR COLLEGE NEW FRESHMEN TWO YEARS PREVIOUS

Year	Public Two-Year Freshmen	SCI	Transfers U of I	ISU	Total	% Fr.[1]
1960	1,852					
1961	2,307					
1962	2,498	172	173	144	489	26.4
1963	2,897	185	224	165	574	24.9
1964	3,782	193	216	157	566	22.7
1965	5,714	228	274	199	701	24.2

[1] % of public junior college new freshmen of two years previous.

TABLE V

GRADUATE ENROLLMENT TRENDS BY TYPE OF INSTITUTION 1960-65

Year	Total	Public Four-Year	Private Four-Year
1960	4,634	3,888	746
1961	4,928	4,161	767
1962	5,600	4,759	841
1963	6,069	5,058	1,011
1964	6,843	5,755	1,088
1965	7,582	6,482	1,100
Increases 1960-65	63.6%	66.7%	47.5%

The total graduate enrollment increased by 64 per cent during the past five years, with a 67 per cent increase for public institutions vs. a 47 per cent increase for private institutions (Drake). It should be noted that Drake enrolls a considerable number of off-campus extension students as degree credit students, and hence the FTE graduate enrollment figure for Drake, especially, would be considerably smaller. Several other private institutions have begun to develop graduate programs, but at the present time these are confined to the summer session, and since the present enrollments are for the fall semester only, the newer programs are not counted.

Enrollment Projections

Undergraduate Projections by Type of Institution

Public Community Colleges. Because the community colleges are essentially two-year institutions, the projections of public community college enrollments were computed by first projecting the number of new freshmen, then projecting the other students as a percentage of the freshman enrollment. Although the percentage of other students to new freshmen has fluctuated by about 10 per cent, depending on the spurt in enrollment for a particular year, the average ratio of other students to new freshmen for the period 1960-65 is about .70, and this ratio was used to determine total enrollment.

Projection of new community college freshmen is made on the basis of two assumptions discussed earlier. The first was that the increase in the new freshman rate for public community colleges would continue at its present rate of growth of about .063 in the five years through 1970, then would level off slightly to .050 between 1970-1975 and 1975-1980. The second factor discussed previously is that, with the exception of the Quad City area, none of the seven metropolitan areas in Iowa as classified by the 1960 census contain public community colleges. Since these metropolitan areas contained about two-thirds of the state's 18-21-year-old population, and the college attendance rate for high school graduates in these areas is about .10 lower than for counties with public junior colleges, and the per cent of high school graduates attending the public community colleges from these areas is about 3 per cent compared with 10 per cent for the state as a whole, it was conservatively estimated that the development of public community colleges in each of these seven areas would increase the total public community college freshman rate for the state by about .05 (as ratio of 18-year-olds).

The problem in projecting enrollments for new institutions is to estimate just when these colleges will begin operation as comprehensive community colleges. Since only three of these areas, Cedar Rapids, Quad Cities, and Waterloo, are in operation even as vocational schools, and since the policy of the state board seems to be to open area institutions as vocational schools with community colleges emerging at a later time, it was assumed that Cedar Rapids would be in operation as a community college by 1970, with programs beginning in perhaps one or two other schools. It was estimated that this development might increase the college attendance rate by .01 by 1970, with the remaining .04 of the anticipated .05 per cent increase assigned to the 1970-75 period. The resulting projections thus assume a leveling of the present rate of increase in attendance of new freshmen at community colleges, but also provide for the probable development of comprehensive colleges in the larger metropolitan areas, thus increasing the total college attendance rate.

The resulting projections are presented in Table VI.

TABLE VI

PUBLIC COMMUNITY COLLEGE DEGREE CREDIT ENROLLMENT PROJECTIONS 1970, 1975, 1980

Year	New Freshmen	Enrollment Rate[1]	Other Students[2]	Total	Per cent Increase[3]
1960	1,852	.048	1,298	3,150	
1965	5,714	.112	3,574	9,288	195
1970	9,616	.185	6,731	16,347	76
1975	14,097	.273	9,868	23,965	47
1980	16,029	.323	11,220	27,249	14

[1] As ratio to 18-year-olds.

[2] Assumes other students as .70 of new freshmen. Ratios were .70 in 1960 and .62 in 1965.

[3] Per cent increases are figured from estimates and did not determine estimates.

TABLE VII

PRIVATE JUNIOR COLLEGE DEGREE CREDIT ENROLLMENT PROJECTIONS 1970, 1975, 1980

Year	Enrollment	Per cent Increase[1]
1960	1,586	
1965	2,794	76.2
1970	3,353	20.0
1975	3,632	10.0
1980	3,911	10.0

[1] Per cent increases are figured from estimates and did not determine estimates.

Private Junior Colleges. A problem is presented in estimating growth in this type of institution since within the period under study, one more private junior college became a four-year institution, one new one was created but too late for the study, and one increased enough to offset the numbers in 1960 enrolled in the one which moved to four-year status. It does not seem likely that other private junior colleges will be created, but it could happen. Regardless of these and other unknowns, it does not seem unreasonable to estimate the increases given in Table VII, but the estimate cannot be documented with hard facts.

Public Four-Year Institutions. From the discussion of enrollment trends at the public four-year institutions, at least two salient observations emerge. The first is that the Regents institutions have received only a very small fraction of the increase in the new freshman college attendance rate (.003 per year, 1960-65). The second is that new freshmen as a percentage of the total undergraduate enrollment in public four-year institutions remained relatively constant between 1960-65 (25.5 per cent). The second observation may be deceptive, since 1965 was at the beginning of the "bulge" from post-war births and by the time this "bulge" has leveled off the per cent will change. However, in using this data other allowances are made to hopefully offset any error.

From these two observations, and from the previously described difficulties in using the 18-21-year-old population as a cohort, it was decided: 1) to project undergraduate enrollments at the Regents institutions as a function of the entering new freshmen, and 2) to estimate separately the effect of increased persistence and junior college transfers on total undergraduate enrollments.

The projections based on the number of new freshmen assume that the ratio of new Regents freshmen to the 18-year-old population will increase by .015 each five years from 1965-1980 and, without considering increases in persistence and transfers, that new freshmen will constitute approximately 25.5 per cent of the total undergraduate enrollment through 1980. (See note above concerning the validity of this per cent.)

The second part of the task was to project separately the effect of increased persistence and junior college transfers on public four-year undergraduate enrollment. Because of a lack of precise empirical data, the result is more of an estimate than a projection. The first adjustment factor is that the Regents institutions will continue to receive junior college transfers at a rate calculated at 25 per cent of those who entered junior colleges two years previously. This factor alone might account for as many as 8,000 additional undergraduate enrollments by 1980.

The second adjustment factor is the persistence rate in the Regents institutions. It has been steadily increasing and should continue to do so, increasing 10 per cent by 1980. A third adjustment factor allows for some increase in advanced professional enrollment.

The projections based upon these assumptions are presented in Table VIII.

Private Four-Year Institutions. The private four-year institutions are perhaps the most difficult group for which to project enrollments. The private colleges have grown by almost 11,000 between 1960-65, but considering colleges other than Parsons, which does not report freshman enrollments, the Iowa private colleges have taken a decreasing share of the new enrollments. As of 1963, Iowa residents constituted 56 per cent of the

TABLE VIII

PUBLIC FOUR-YEAR INSTITUTIONS UNDERGRADUATE DEGREE CREDIT ENROLLMENT PROJECTIONS, 1970, 1975, 1980

Year	New Freshmen	r 1	Undergraduate Enrollment 2	3	Total 2 & 3
1960	5,219	.135			20,567
1965	7,708	.150			30,288
			Projected		
1970	8,576	.165	33,631	6,800	40,400
1975	9,295	.180	36,451	10,000	46,500
1980	9,677	.195	37,949	14,000	52,000

[1] As ratio of 18-year-olds.

[2] Undergraduate enrollment assuming new freshmen as 25.5 per cent of total.

[3] Total of adjustment factors to account for increases in junior college transfers and in persistence.

enrollment in Iowa private colleges, but by the fall of 1966 this percentage had dropped to 49. In 1966 Iowa students constituted only 7 per cent of the total enrollments at Parsons (which expanded from 1,600 in 1960 to 5,151 in 1966) and Midwestern (which opened in 1965 and had an enrollment of 1,040 in 1966).

The fact that the Iowa private colleges are recruiting heavily from outside the state means that they are recognizing certain obvious factors concerning the slow rise in the Iowa population, but it also means that enrollment figures must be broken down into Iowa students and non-Iowa students when one is interested in seeing the extent to which Iowa youth are being provided educational opportunities.

Due to the shifting relation between private college enrollment and Iowa population, it did not seem valid to base the private college projections on an Iowa cohort, except to note that these institutions will probably receive a limited number of additional students from Iowa.

For purposes of private four-year college undergraduate projections, the following assumptions were made:

1. The major growth in Iowa private colleges through 1980 will result not from population growth, but from improved retention and an increase in out-of-state students. Iowa colleges will recruit students vigorously in other states, but the per cent increase in students from other states may or may not be as great as

it has been in the past few years. A number of other states, particularly those on the east coast, have been caught short in their higher educational planning, but after 1970 these states will begin to catch up and provide educational resources of their own.

2. Parsons College and Midwestern College will continue to grow at perhaps their present rate through 1970, but then will level off in enrollments.
3. New private colleges which may be added in Iowa during the next several years will not be large institutions.

The resulting projections contained in Table IX are based upon an assessment of the institutions' own projections in light of more recent trends in Iowa and elsewhere. The projections suggest that the actual growth between 1965-70 will equal that of 1960-65, but the per cent growth will decline rapidly, much as the per cent growth of public institutions will decline. Following 1970, the estimate is for a further decline in the rate of growth.

Graduate Enrollment Projections

The problem in projecting graduate enrollments is somewhat analogous to the projection of private college enrollments. It is difficult to define an appropriate cohort group for a statewide projection, and actual enrollments will probably reflect institutional policies more than potential numbers of students, although there is a significant relationship between the two factors.

TABLE IX

PRIVATE FOUR-YEAR COLLEGE
UNDERGRADUATE DEGREE CREDIT ENROLLMENT PROJECTIONS
1970, 1975, 1980

Year	Enrollment	Per cent Increase Each Five Years
1960	23,787	
1965	34,738	46.0
1970	45,200	30.0
1975	51,900	15.0
1980	57,100	10.0

Table X presents four alternative graduate enrollment projections for 1970, 1975, and 1980.

Projection number 1 is based upon conferences with officials of the Regents institutions as to future plans and potentials. Although several private colleges stated that they plan to be in graduate instruction by 1970 or 1980, these institutions were quite vague as to enrollment, and hence they are not included in projection number 1.

Projection number 2 utilized the U.S. Office of Education projection of undergraduates and first level degrees and is based upon the assumption that Iowa will continue to receive an increasing share of first level degree holders as graduate students. In 1955 there were 287,401 undergraduate degrees awarded, compared with Iowa's graduate enrollment of 2,500, or a ratio of .0087. By 1960 the U.S. first level degrees had increased to 394,889, and Iowa's ratio to .012. In 1965 the projected undergraduate degrees were 537,000 and the Iowa graduate enrollment had risen to .014 of that total. The five-year increase in the enrollment rate was .003 from 1955-60 and .002 from 1960-65. Applying the more liberal 1955-60 growth rate to the U.S. Office projections of 731,000 and 815,000 undergraduate and first level degrees to be awarded in 1970 and 1975, respectively, yields the anticipated Iowa graduate enrollment presented in Table X.

TABLE X

ALTERNATIVE GRADUATE ENROLLMENT PROJECTIONS
1970, 1975, 1980

Year	Actual	Projections			
		1	2	3	4
1960	4,634				
1965	7,582				
1970		12,650	12,529	13,208	12,108
1975			16,442	17,561	15,229
1980		19,187		20,734	18,349

1 Estimates based on conferences with institutional representatives. (Assume no new graduate institutions.)
2 Based on continued increased proportion of U.S. undergraduates and first level degrees as projected by U.S. Office of Education.
3 Based upon Iowa as continued proportion of U.S. graduate enrollment as projected by ACE (Cartter).
4 Committee A (Preliminary Report, p. 34).

Projection number 3 is based upon the assumption that Iowa will continue to receive its present percentage of the total United States graduate enrollment as projected by Allan Cartter of the American Council on Education.

Cartter[1] projected graduate enrollments by 1) assuming that baccalaureate degrees would constitute approximately 13 per cent of the undergraduate enrollment for the preceding year, 2) assuming that the per cent of college graduates entering full-time graduate work would rise from the 1962 level of 19 per cent to 25 per cent in 1975 and then level off, and 3) assuming that entering full-time graduate enrollment would remain between 21 and 22 per cent of the total graduate enrollment. The Cartter projections are based on the United States 18-21-year-old population which rose from 9, 546, 000 in 1960 to 12, 282, 000 in 1965 and is anticipated to rise to 16, 790, 000 by 1980. The assumption that Iowa will continue to receive its share of the nation's college enrollments, even though the Iowa 18-21-year-old population is increasing at a far slower rate, results in a considerably more liberal estimate than Cartter would actually make for the state. Nevertheless, the "Cartter" projections referred to in the following tables make this assumption.

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[1] Allan Cartter and Robert Farrell, Educational Record, Spring, 1965, pp. 19-28.

Projection number 4 is based upon the assumption of the graduate enrollment reflecting a constant increase expressed as a ratio of 18-21-year-olds in Iowa.

Despite different assumptions, the projections are within 2, 500 students of one another for the year 1980.

The graduate enrollment projections are presented in Table XI, and are based upon an analysis of the institutions' own plans and an evaluation of national trends which will likely affect Iowa.

The assumptions for the projections in Table XI are as follows:

1. That through state and institutional policies Iowa will try to match the national growth in graduate education. This assumption has been true in the past, and with Iowa's commitment to graduate education there is no reason to doubt it in the future.
2. That the goal of substantial increases in graduate enrollment will be pursued as a major policy in the public four-year institutions. This is perhaps the most significant assumption of all, since these schools are presumed to account for most of the growth in graduate enrollments.
3. Drake will emphasize graduate education to a greater degree than it has in the past. However, Drake will also emphasize on-campus instruction rather than its present extension pattern, which may influence the rate of growth.
4. Three to six smaller private colleges will become involved in year-around graduate offerings by 1980. Although the head count of these students may approach 1, 500, it is likely that most of them will be part-time students and the FTE figure will be significantly less.
5. Both the state and private institutions will accelerate off-campus graduate instruction cautiously in order to preserve quality. While this type of instruction will account for some of the increase, it will not be as significant a factor as has been the case in other states, such as Illinois.

The assumptions lack precision and are subject to major error. For example, if the state, or a significant number of school districts in Iowa, were to require the master's degree for continued employment in secondary or elementary education, rather sizable

TABLE XI

GRADUATE ENROLLMENT PROJECTIONS
BY TYPE OF INSTITUTION, 1970, 1975, 1980

	Type of Institution		
Year	Public Four-Year	Private Four-Year	Total
1960	3,888	746	4,634
1965	6,482	1,100	7,582
	Projected		
1970	10,500	2,000	12,500
1975	13,000	3,000	16,000
1980	16,000	4,000	20,000

increases in graduate enrollments would occur, as in Indiana. Also, if The University of Iowa or other institutions were to concentrate their teacher education preparation in the MAT Program as at the University of Wisconsin, another sizable increase in graduate enrollment might result.

Vocational-Technical Enrollments

For purposes of the present study, vocational-technical enrollments are defined as those students enrolled in programs lasting at least one semester and leading to a degree or certificate of completion, but for which credit transferable to a four-year baccalaureate degree is not allowed. For purposes of projections, it is assumed that the entire vocational-technical enrollment in the future will be in community colleges and/or area vocational schools. At the present time, about 300 students are enrolled in the technical institute at Iowa State University, but it is anticipated that this institute will not expand significantly.

In September, 1965, using the above definitions, there were 1,850 students enrolled in post high school vocational-technical curricula in Iowa. Of these, it is estimated that perhaps 350 were enrolled at two state institutions, with the remainder at community colleges and area vocational schools. There seems to be no precise way of projecting vocational-technical enrollments in the future, but an estimate of these enrollments might be as follows: Enrollments in institutions other than Regents institutions might increase from 1,500 in 1965 to perhaps 5,000 in 1970, 10,000 in 1975, and 15,000 in 1980.

This estimate is based upon certain rather tenuous assumptions:

1. There will continue to be significant increases in federal funds available for vocational-technical education over the next several years. The federal government is committed to these programs, and all indications are that increased funding will continue. However, after several years the funding may level off.

TABLE XII

TOTAL ENROLLMENT PROJECTIONS
BY TYPE OF INSTITUTION, 1970, 1975, 1980[1]

Year	18-21 Year Olds	Enrollment							
		Total	Total Degree Credit	Public Two-Year			Private Two-Year	Public Four-Year	Private Four-Year
				Total	Degree Credit	Vocational Technical			
1960	137, 196		54, 007		3, 150		1, 586	24, 455	24, 533
1965	155, 078	86, 448[2]	84, 948	10, 738	9, 238[4]	1, 500[3]	2, 794	36, 770	35, 838
					Projected				
1970	181, 543	122, 800	117, 800	21, 300	16, 300	5, 000	3, 400	50, 900	47, 200
1975	184, 517	152, 000	142, 000	34, 000	24, 000	10, 000	3, 600	59, 500	54, 900
1980	187, 414	175, 200	160, 200	42, 200	27, 200	15, 000	3, 900	68, 000	61, 100

[1] Enrollment projections by type of institution have been rounded to the nearest 100.

[2] Includes College of Osteopathic Medicine enrollments of 283 in 1960 and 308 in 1965, not included in sub-totals.

[3] Many vocational-technical programs were not actually under area control in 1965 and many were not associated with Junior Colleges.

[4] Includes some technical programs which carry degree credit.

TABLE XIII

TOTAL ENROLLMENT PROJECTIONS
1970, 1975, 1980, FROM TABLE XII EXPRESSED AS RATIO OF IOWA 18-21-YEAR-OLDS[1]

Year	Total	Enrollment (Table 12) as Ratio 18-21-year-olds						
		Total Degree Credit	Public Two-Year			Private Two-Year	Public Four-Year	Private Four-Year
			Total	Degree Credit	Vocational[3] Technical			
1960		.394		.023		.012	.178	.179
1965	.557	.548	.069	.060	.010	.018	.237	.231
				Projected				
1970	.676	.649	.117	.090	.028	.019	.280	.260
1975	.824	.770	.184	.130	.054	.020	.323	.298
1980	.935	.855	.225	.145	.080	.021	.363	.326

[1] Enrollment projections by type of institution have been rounded to the nearest 100.

[2] Includes College of Osteopathic Medicine enrollments of 283 in 1960 and 308 in 1965, not included in sub-totals.

[3] Many vocational-technical programs were not actually under area control in 1965.

2. Iowa will continue to emphasize post high school vocational-technical education, and monies which might be used at the secondary level in other states will likely be placed in post high school programs in Iowa.

Projected Total Enrollments

The total enrollment and total degree credit enrollment projections for Iowa, based on the enrollment components just described, are presented in Table XII, and described as ratios of 18-21-year-olds in Table XIII. Comparable degree credit projections from other sources are presented in Table XIV.

With the exception of the estimate based on an anticipated 1.9 per cent increase in the college attendance rate, the present projections are the most conservative. The projections developed in the present report are based upon certain assumptions reflecting the present and likely future policies of post high school education in Iowa. For the most part these policies have and are likely to be somewhat conservative, and the enrollment projections follow from these assumptions. To the extent that policies change, enrollments will increase faster than projected.

TABLE XIV

SUMMARY OF ENROLLMENT PROJECTIONS
TOTAL DEGREE CREDIT ENROLLMENT

Year	18-21 Year-Olds	Actual Enrollment	3%[1]	2.5%[2]	1.9%[3]	Accepted Estimates[4]
1960	137,916	54,007				
1965	155,078	84,948				
1970	181,543		125,628	121,089	105,476	117,800
1975	184,517		155,363	146,137	124,733	142,000
1980	187,414		185,915	171,859	144,496	160,000

[1] 3 per cent is the average increase in the college attendance rate, 1960-65.

[2] The 2.5 per cent rate represents a compromise between projections based on trends over the last five years and those based on the last ten.

[3] 1.9 per cent is the average increase in the college attendance rate over the last ten years.

[4] See Table XII for components (Total Degree Credit).

Iowa Students in Iowa Colleges

Data in Chapter IV showed factors of student migration, and assumptions (not always spelled out) in this chapter have had to be made in terms of migration pattern changes. If these assumptions are put together, some gross estimates can be made showing probable shifts affecting Iowa college enrollments when considered in terms of only Iowa students.

1. The rapid expansion of public two-year institutions, made up almost exclusively of Iowans, will expand their percentage of Iowa students served.
2. The four-year public institutions will be affected by transfers of Iowans from the public two-year institutions and by increased out-of-state fees. Both factors will continue the recent trend of decreasing the per cent of out-of-state students.
3. The private colleges will continue the recent trend of increasing percentages of students from out of state, together with other factors mentioned previously.

Iowans in Iowa Institutions 1963

	Enrollment	% Iowans	Iowans	Per cent by type of institution
Public Four-Year	29,585	73.8	21,821	49.2
Public Two-Year	4,837	95.7	4,627	10.5
Private Two- and Four-Year	31,921	56.0	17,863	40.3
TOTALS	66,343	66.8	44,311	100.0

Estimated Iowans in Iowa Institutions 1980

	Enrollment	% Iowans	Iowans	Per cent by type of institution
Public Four-Year	68,000	75	51,000	44
Public Two-Year	42,200	96	40,300	34
Private Two- and Four-Year	65,000	40	26,000	22
TOTALS	175,200	67	117,300	100

This estimate shows the total per cent of Iowans in Iowa institutions almost unchanged from 1963. Likewise it is assumed that a similar per cent of Iowans (as in 1963) would attend institutions in other states, but in all probability there would be significant shifts by type of institutions. The ratio of in-state migration for Iowa did not shift materially in three national studies between 1946 and 1963, and therefore it seems reasonable to assume it will not shift naturally in the near future.

Observation and Recommendation

Previous estimates for Iowa post high school enrollments have all erred in being too conservative, notably the report of three Regents Registrars in 1955 and the Gibson report in 1959. These estimates may in the future be criticized for the same fault, but is believed it would be a greater error to "cry wolf" and have something materially less develop than to show figures of a less alarming rate and later to exceed them. It was felt imprudent to ask Iowans to overbuild or overfinance when their resources are not unlimited.

Recommendation. Enrollment patterns change and factors influencing them alter in unforeseen ways. Therefore, provision should be made for a continuous and systematic collection of enrollment data for Iowa and for periodic updating of enrollment projections.

CHAPTER VI

EDUCATIONAL PROGRAMS AND FUNCTIONS

Introduction

The question of what educational programs and allied functions are to be developed or expanded in the next several years in Iowa, and the question of which present or new institutions should be responsible for such programs, are among the most critical to be faced by Iowa post high school education.

Such questions are treated in this chapter in two major sections: Section A examines the status of existing programs and identifies the need for new and expanded educational programs in Iowa; Section B presents a proposed pattern of post high school education for Iowa.

Two basic facts should be noted.

1. The present study is not a detailed planning study; it does not propose a master plan for step-by-step development of post high school education in the state. The study is rather a preliminary attempt to delineate broad educational functions and to suggest possible roles for institutions in carrying out these functions.
2. The Iowa Cooperative Study is a voluntary study, the success of which depends upon its acceptance by participating institutions. The proposed pattern was developed by representatives of existing colleges and universities in Iowa as they attempted to coordinate the plans of their individual institutions into a coherent pattern. As such, the Iowa cooperative Study is a positive example of coordination of educational planning by voluntary means.

Section A. The Need For New And Expanded Programs

Post high school educational institutions perform three essential functions: instruction, research, and public service. Such diverse types of instruction are offered at so many levels, however, that for purposes of analysis, it is helpful to break the instructional function into three parts: 1) vocational-technical instruction, 2) instruction leading to baccalaureate degrees, and 3) graduate and advanced professional instruction.

Further, these different types of instruction are offered in widely differing kinds of institutions. The outline below indicates the broad interrelationship between functions and types of institutions:

FUNCTIONS	TYPES OF INSTITUTIONS
1. Instruction	
a. Vocational-Technical Instruction	1. Area Vocational-Technical Schools (their primary function)

	2. Community Colleges (a major function required by Iowa law) 3. Regents Institutions (minor - highly specialized programs only) 4. Private Colleges (limited, if any)
b. Undergraduate Instruction	1. Community Colleges (an important function; many students prepared to transfer to four-year colleges) 2. Regents (a major function, especially at junior and senior level) 3. Private (their major function)
c. Graduate and Advanced Professional Instruction	1. Regents (a major function - many programs not found elsewhere in the state. 2. Private (limited-Principally at Drake)
2. Extension and Public Service	1. Area-Vocational-Technical Schools and Community Colleges (adult and continuing education and other public services within their geographic areas) 2. Regents (a major function, state-wide) 3. Private (varies greatly among institutions)
3. Research	1. Regents (a major function) 2. Private (a minor function)

Instruction

Vocational-Technical Instruction

According to the enrollment projections in Chapter V, the fastest growing area in post high school education in Iowa will be vocational-technical education. It should be recognized at this point, however, that the projection of substantial growth is based more on the desires of the people of Iowa, as reflected in the passage of area school legislation, than on fully developed specific plans for vocational-technical programs.

Vocational-technical programs encompass curricula ranging from semi-skilled offerings such as auto mechanics, practical nursing, baking, and clerical training to highly developed technical programs, including electronic, mechanical, and civil technology, wholesale marketing, computer programming, medical secretarial training, and dental hygiene. Students enrolled in vocational-technical programs also take general education courses such as English, American government, and fine arts.

Vocational-technical education has only recently emerged as a major component of education beyond the high school. The reasons for this emergence are perhaps four:

1. A middle occupational level has developed between the skilled vocational specialties and the occupations requiring at least a four-year college degree. This level is usually labeled as the technical, or more broadly, the semi-professional level. Technical specialties such as engineering technology, medical technology, and computer programming, result from a) the upgrading of lower positions because of technological and other advances in the utilization of knowledge, and b) the realization that many tasks presently performed by persons at the professional level could be carried out by individuals of differing abilities if these latter individuals were given a technical education appropriate to the demands of their jobs. As the data in the Economic and Manpower chapter demonstrate, the fastest growing occupational level in Iowa is the professional-technical level, and, although the professions account for the great numbers, the percentage growth will likely be greatest at the technical level.

2. At the vocational level many of the skilled and semi-skilled occupations were formerly entered through on-the-job or apprenticeship training. Modern technology and other developments, however, have necessitated the initiation of educational programs to provide the training needed by many workers.

3. A third reason is the need for continuing education. Various estimates suggest that the average worker will need to be retrained from three to six times during his occupational life-time. While employers are responsible for much of this retraining, the complex nature of the task and the discontinuance of jobs due to technological advances and other industrial shifts argue that education must become more actively involved in retraining. The need for retraining is especially great in Iowa at present because of the major shift from agricultural to non-agricultural occupations.

4. The most fundamental reason for the development of educational programs for citizens other than those desiring a four-year college degree lies in this country's commitment to equality of opportunity and to excellence. This commitment must now be extended to opportunity for many forms of post high school education and to excellence in all types of endeavor. As the present Secretary of Health, Education, and Welfare, John Gardner, stated several years ago:

> "We must learn to honor excellence (indeed to demand it) in every socially accepted human activity, however humble the activity, and to scorn shoddiness however exalted the activity. There may be excellent plumbers and incompetent plumbers, excellent philosophers and incompetent philosophers. The society which scorns excellence in plumbing because plumbing is an humble activity and tolerates shoddiness in philosophy because it is an exalted activity will have neither good plumbing nor good philosophy. Neither its pipes nor its theories will hold water." (Gardner, 1961).[1]

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[1] John W. Gardner, Excellence, Harper and Brothers, New York, 1961.

The Legal Definition of Vocational-Technical Education in Iowa. The 61st General Assembly made the following provisions for the newly created districts.[2]

> It is hereby declared to be the policy of the state of Iowa and the purpose of this Act to provide for the establishment of not more than twenty (20) acres which shall include all of the area of the state and which may operate either area vocational schools or area community colleges offering to the greatest extent possible, educational opportunities and services in each of the following, when applicable, but not necessarily limited to:
>
> 1. The first two (2) years of college work including pre-professional education.
> 2. Vocational and technical training.
> 3. Programs for in-service training and retraining of workers.
> 4. Programs for high school completion for students of post high school age.
> 5. Programs for all students of high school age who may best serve themselves by enrolling for vocational and technical training while also enrolled in a local high school, public or private.
> 6. Student personnel services.
> 7. Community services.
> 8. Vocational education for persons who have academic, socio-economic, or other handicaps which prevent succeeding in regular vocational education programs.
> 9. Training, retraining, and all necessary preparation for productive employment of all citizens.

Unlike some states, such as California, where post high school institutions require a secondary certificate or its equivalent for admission, the Iowa community colleges and area vocational-technical schools will thus include some secondary level programs. While some Iowa high schools are likely to remain too small to offer comprehensive vocational programs, it would seem school district reorganization should continue and every effort should be made to offer secondary school instruction to secondary school-age children. This study endorses the idea that Iowa community colleges and area vocational-technical schools develop programs at the vocational level for a) persons who have not had, or who have not taken advantage of opportunities in high school, b) for high school drop-outs, and c) for the many adults who may now need retraining.

Vocational-Technical Education Prior to the Impact of the 1965 Area School Legislation. In 1965, and prior to it, programs were offered by local school districts, community colleges, area vocational-technical schools established by the 61st General Assembly, public four-year institutions, and private institutions both of a proprietory and non-proprietory nature. As noted in earlier chapters, the private proprietory schools were not included in the present study, but their impact on less than baccalaureate degree programs is significant and should be considered in the development of future post high school educational programs.

As of September, 1965, prior to the time when the new legislation could have any effect, 1,850 persons were enrolled in formal post high school vocational-technical curricula in Iowa. (The enrollments by program and by location are reported in Table I.)

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[2] Code: State of Iowa, pp. 2 and 6.

TABLE I

ENROLLMENTS IN POST HIGH SCHOOL PROGRAMS IN VOCATIONAL-TECHNICAL EDUCATION SEPTEMBER, 1965

Agricultural Education
(2-year programs)

			Number of Students		
Title of Program	Location	Agency	1st Yr.	2nd Yr.	Total
Feed and Fertilizer Marketing Technology*	Muscatine	Comm. Coll.	36	0	36
				Total	36

Distributive Education
(2-year programs, except for Hardware Marketing which is a 1-year program)

Fashion Merchandising	Iowa Falls	Comm. Coll.	17	0	17
Feed and Fertilizer Marketing	Muscatine	Comm. Coll.			
Food Marketing Management	Fort Dodge	Comm. Coll.	12	20	32
Hardware Marketing**	Ottumwa	Iowa Tech. Educ. Center	0	0	0
Petroleum Marketing Management	Iowa Falls	Comm. Coll.	15	15	30
Retail Marketing Management	Iowa Falls	Comm. Coll.	26	19	45
				Total	124

Health Occupations Education
(1-year programs)

Medical Lab. Ass't. Educ.	Davenport	Board of Educ.	8		8
Medical Ass't. Educ.	Fort Dodge	Comm. Coll.	20		20
Practical Nurse Education	Ames	Board of Educ.	21		21
	Burlington	Comm. Coll.	15		15
	Centerville	Comm. Coll.	16		16
	Clarinda	Comm. Coll.	16		16
	Clinton	Comm. Coll.	19		19
	Davenport	Comm. Coll.	50		50
	Des Moines	Board of Educ.	55		55
	Estherville	Comm. Coll.	16		16
	Iowa City	Coll. of Nursing	35		35
	Mason City	Comm. Coll.	25		25
	Ottumwa	Area-Voc.-Tech. School	40		40
	Sioux City	Board of Educ.	33		33
	Waterloo	Board of Educ.	38		38
				Total	407

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* Same course listed by each service

** Not in operation at the present time

TABLE I (continued)

Home Economics Education
(1-year programs)

Title of Program	Location	Agency	Number of Students 1st Yr.	 2nd Yr.	 Total
None	None	None			

Office Occupations Education
(1-year programs)

Title of Program	Location	Agency	1st Yr.	2nd Yr.	Total
Clerical Office Education	Estherville	Junior College	8		8
Secretarial Office Educ.	Fort Dodge	Comm. Coll.	8		8
Secretarial Office Educ. (Insurance emphasis)	Iowa Falls	Comm. Coll.	16		16
Secretarial and Clerical Office Education	Sheldon	N.W. Iowa Voc. School	15		15
	Webster City	Comm. Coll.	12		12
			Total		59

Technical Education
(2-year programs)

Title of Program	Location	Agency	1st Yr.	2nd Yr.	Total
Chemical Technology	Ames	I.S.U. Tech. Inst.	14	8	22
Civil Technology	Ames	I.S.U. Tech. Inst.	40	43	83
Computer Programmer	Cedar Rapids	Board of Educ.	21	0	21
	Davenport	Board of Educ.	17	23	40
	Ottumwa	Area Voc.-Tech. School	40	15	55
Electronics Technology	Ames	I.S.U. Tech. Inst.	68	44	112
	Burlington	Comm. Coll.	14	13	27
	Cedar Rapids	Board of Educ.	15	0	15
	Centerville	Comm. Coll.	26	8	34
	Clinton	Comm. Coll.	16	0	16
	Davenport	Board of Educ.	20	13	33
	Fort Dodge	Comm. Coll.	18	0	18
	Mason City	Comm. Coll.	22	14	36
	Ottumwa	Area Voc.-Tech. School	23	12	35
	Sioux City	Board of Educ.	17	8	25
	Waterloo	Board of Educ.	24	10	34
Mechanical Technology	Ames	I.S.U. Tech. Inst.	47	53	100
	Burlington	Comm. Coll.	28	8	36
	Cedar Rapids	Board of Educ.	17	0	17
	Clarinda	Comm. Coll.	16	16	32
	Davenport	Board of Educ.	14	8	22
	Sioux City	Board of Educ.	20	7	27
	Waterloo	Board of Educ.	20	12	32
	Mason City	Comm. Coll.	41	14	55
				Total	927

TABLE I (continued)

Trade and Industrial Education
(1-year programs)

			Number of Students		
Title of Program	Location	Agency	1st Yr.	2nd Yr.	Total
Auto Mechanics	Burlington	Comm. Coll.	11		11
	Cedar Rapids	Board of Educ.	16		16
	Centerville	Comm. Coll.	33		33
	Fort Dodge	Comm. Coll.	22		22
	Mason City	Comm. Coll.	21		21
	Sheldon	N.W. Iowa Voc. Sch.	43		43
Auto Body and Fender	Sheldon	N.W. Iowa Soc. Sch.	26		26
Civil and Production Drafting	Clinton	Comm. Coll.	18		18
Electronic Accounting Computer Maintenance	Ottumwa	Voc.-Tech. School	8		8
Machine Shop	Cedar Rapids	Board of Educ.	17		17
Machine Shop (Veterans)	Des Moines	Voc.-Tech. High Sch.	12		12
Radio-TV Service	Iowa Falls	Comm. Coll.	13		13
Refrigeration and Air Conditioning Servicing	Mason City	Comm. Coll.	20		20
Welding (combination)	Cedar Rapids	Board of Educ.	11		11
	Sheldon	N.W. Iowa Voc. Sch.	26		26
				Total	297
				Grand Total	1850

These enrollments were in sixty-four programs encompassing twenty-four separate vocational-technical specialties. In addition to vocational-technical curricula, there were 533 enrollments in programs operated under the Manpower and Development Training Act. These enrollments were in twenty-nine programs covering nineteen different specialties.

Indicative of Iowa's pattern of vocational-technical education in 1965 was the fact that 763 (41 per cent) of the 1,850 vocational-technical enrollments were in the more vocationally oriented one-year programs, as contrasted with 59 per cent in the two-year semi-professional programs. The vocational level figures included 434 enrollments in thirteen one-year practical nursing programs and 146 enrollments in six auto-mechanics programs. This left 183 enrollments in the remaining sixteen one-year vocational programs, indicating both a relative lack of emphasis on vocational programs outside of these two areas and a very low average enrollment (twelve) in the remaining programs.

The location of these vocational-technical programs further bespeaks the challenge which Iowa faces. The fastest growing areas in Iowa are the five metropolitan areas as classified by the Census Bureau. In 1960 these areas contained 33 per cent of Iowa's population. Although the metropolitan area vocational-technical enrollment of 563 constituted 37 per cent of the total enrollment (omitting the 317 students at the Iowa State University Technical Institute), there were two metropolitan areas in Iowa, Council Bluffs and Dubuque, which were without vocational-technical programs as of fall, 1965. Further, aside from a few programs sponsored by school boards in Des Moines, Sioux City, and the Quad-Cities, and the programs at the Sheldon and Ottumwa vocational schools, the remaining vocational-technical enrollments were located at the sixteen Iowa public junior colleges. This pattern left certain areas of northeastern and western Iowa without post high school vocational-technical programs.

The data available thus imply that vocational-technical planning in Iowa has been somewhat uneven. Approximately one-third of the programs considered desirable for a single comprehensive vo-tech institution were not found in any of the Iowa institutions in 1965. For example, there were no vo-tech programs at all in home economics, or in business areas such as insurance or real estate.

Since the public community colleges will provide the vehicle for most of the future development of vocational-technical education in Iowa, a special analysis was made of the programs of these institutions.[3] In the fall semester, 1964, the median number of vocational-technical courses offered in Iowa junior colleges was fifteen, while three (25 per cent) of the thirteen reporting institutions offered less than three courses. In a truly comprehensive community college, at least one-third of the course work should be in other than transfer programs; not a single junior college in fall, 1964, met this minimum requirement. The median enrollment in these courses was seventeen; but one-fourth of the institutions enrolled less than twelve students per course.

Iowa community colleges should emphasize general education in all programs to a far greater degree than they have to date. Proponents of vocational-technical education are correct when they say that little interest has been shown in this type of student by the liberal arts faculty of most post high school institutions. (Most Iowa colleges do not offer general education courses designed for students not in degree or transfer programs.)

Undergraduate Instruction

According to the enrollment projections contained in Chapter V, undergraduate education will continue to be a major focus of post high school education in Iowa. Although undergraduate education has been associated traditionally with the liberal arts and baccalaureate level professions, it is coming to encompass also a wide variety of occupational and applied curricula, some of which have only recently emerged as baccalaureate level entities.

In addition, Iowa is moving to a pattern of undergraduate education in which, instead of following the traditional four-year liberal arts program at a small private college or one of three state institutions, many students will begin their collegiate career in public community colleges and transfer to four-year institutions at the end of one or two years. The implications of this significant alternative pattern of post high school education are discussed later in this chapter.

Undergraduate Degree Trends. Insight into the relative emphases now existing in Iowa institutions can be gained by examining the number of degrees awarded in various fields in Iowa compared with other states. Data compiled from the annual reports of the U.S. Office of Education reveal that Iowa, in 1963, with a 1.5 per cent of the United States population, accounted for 8,592 degrees, or 1.9 per cent of all baccalaureate degrees awarded in the United States. (The complete figures are presented in Table II.)

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[3] The course enrollment data for all types of colleges are reported in detail in The Preliminary Report of Committee C: "Programs and Functions," June, 1966.

A comparison of degrees awarded in 1963 with those awarded in 1951, again using the U.S. Office figures, indicates that at the baccalaureate degree level Iowa followed the nation generally (Iowa, a 16 per cent gain 1951-63; the United States 17 per cent), gaining or declining at roughly the same rate in specific fields, except where Iowa was catching up with the nation in a few selected areas. The result is that in 1963 Iowa was more like the rest of the nation in the pattern of baccalaureate degrees awarded than it was in 1951.

In 1963, there were no major fields in which Iowa awarded significantly less than its per capita rate of baccalaureate degrees, whereas the state awarded proportionately more degrees in three fields: agriculture, home economics, and the health professions. Agriculture and home economics reflect Iowa's relationship to food production and distribution and the first level professional degrees in the health professions are a result of the development of the medical school complex at The University of Iowa.

TABLE II

DEGREE PROGRAMS PRESENTLY OFFERED IN IOWA COLLEGES AND UNIVERSITIES

Field	Degree Presently Offered in Iowa		
1. AGRICULTURE	B. A.	M. A.	Ph. D.
Agricultural Business	X	X	X
Agricultural Education	X	-	-
Agricultural Engineering	X	X	X
Agricultural Journalism	X	X	-
Agronomy	X	X	X
Animal Husbandry (Science)	X	X	X
Dairy Husbandry (Science)	X	-	-
Dairy Industry	X	X	-
Farm Operation	X	-	-
Fisheries and Wildlife	-	-	-
Biology	X	X	-
Food Technology	X	X	X
Forestry	X	X	X
Horticulture	X	X	X
Industrial Education	X	X	-
Landscape Architecture	X	X	-
Plant Pathology	X	X	X
Poultry Science	X	X	X
Rural Sociology	X	X	X
2. ARCHITECTURE			
Architecture	X	X	-

TABLE II (continued)

Field	B. A.	M. A.	Ph. D.
BIOLOGICAL SCIENCE			
Premedical, predental, and preveterinary sciences	X	X	-
Biology, general	X	X	-
Botany, general	X	X	X
Zoology, general	X	X	X
Anatomy and Histology Bacteriology, Virology, Mycology, Parasitology, Microbiology	X	X	X
Biochemistry	X	X	X
Entomology	X	X	X
Genetics	X	X	X
Nutrition	X	X	-
Pharmacology	-	X	X
Physiology	-	X	X
Plant Pathology	X	X	X
Biological Sciences, other	-	X	-
BUSINESS AND COMMERCE			
Business and commerce, general	X	X	X
Accounting	X	X	X
Economics	X	X	X
Business Administration	X	X	X
Secretarial Studies	X	-	-
Business and commerce, other	X	X	X
EDUCATION			
Specialized Teaching Fields			
Adult Education	X	X	X
Agricultural Education	X	X	-
Art Education	X	X	-
Audiovisual or Educational Media	X	X	X
Business and Commercial Education	X	X	X
Distributive Education	X	-	-
Education of Exceptional Children	X	X	X
Education of Mentally Retarded	X	X	X
Educational Psychology and Measurement	X	X	X
Home Economics Education	X	X	-
Industrial Arts Education	X	X	-
Music Education	X	X	-
Physical Education	X	X	X
Recreation	X	X	-
Specialized Teaching Fields, Other	-	X	X
General Teaching Fields			
Early Childhood Education	X	-	-
Elementary Education	X	X	X
Secondary Education	X	X	X

TABLE II (continued)

Field	B. A.	M. A.	Ph. D.
Non-teaching Fields:			
Educational Administration, Supervision, Education, Finance, Curriculum, Comparative Ed., etc.	-	X	X
Counseling and Guidance	-	X	-
College Student Personnel	-	X	X
Library Education	-	X	X
Educational-Preprofessional B. A.	X	-	-
Education, other Higher Education	-	X	X
ENGINEERING			
Aeronautical	X	X	X
Agricultural	X	X	X
Architectural	X	X	-
Ceramic	X	X	X
Chemical	X	X	X
Civil	X	X	X
Electrical	X	X	X
Industrial	X	X	X
Mechanical	X	X	X
Mechanics and Hydraulics	X	X	X
Nuclear	X	X	X
Sanitary	X	X	X
ENGLISH AND JOURNALISM			
English and Literature	X	X	X
Journalism	X	X	X
FINE-APPLIED ARTS			
Art, general	X	X	X
Studio	-	X	-
Art History	-	X	X
Music (including Sacred Music)	X	X	X
Theory of Music	-	-	X
Composition	-	X	X
Historical Surveys and Musicology	-	-	X
Speech and Dramatic Art	X	X	X
Fine and Applied Arts, not elsewhere classified	X	X	X
FOREIGN LANGUAGE AND LITERATURE			
Latin for Classical Greek	X	X	X
Modern Foreign Languages:			
French	X	X	X
German	X	X	X

TABLE II (continued)

Field	B. A.	M. A.	Ph. D.
Other Germanic Languages	X	-	-
Chinese	X	-	-
Russian	X	-	-
Italian	X	-	-
Spanish	X	-	-
Other Foreign Languages	X	-	-
FORESTRY	X	X	X
GEOGRAPHY	X	X	X
HEALTH PROFESSIONS			
Dental Hygiene	X	X	-
Dentistry, D. D. S. and D. M. D.	X	-	-
Hospital Administration	X	X	X
Medical Technology	X	-	-
Medicine, M. D. only (1st prof.)	X	-	-
Nursing or Public Health Nursing	X	X	-
Occupational Therapy	X	-	-
Vocational Rehabilitation	X	X	X
Osteopathy (1st prof.)	X	-	-
Pharmacy	X	X	X
Physical Therapy, Physiotherapy	-	X	-
Veterinary Medicine, D. V. M. (1st prof.)	X	-	-
Clinical Dental Sciences	-	X	X
Clinical Medical Sciences	-	X	X
Clinical Veterinary Medical Sciences	-	X	X
HOME ECONOMICS			
Home Economics, general	X	X	-
Child Development, Family Relations	X	X	X
Clothing and Textiles	X	X	-
Foods and Nutrition	X	X	X
Institution Management and Administration	X	-	-
Home Economics, other	X	-	-
LAW	X	X	-
LIBRARY SCIENCE	X	-	-
MATHEMATICAL SUBJECTS			
Mathematics	X	X	X
Statistics	X	X	X
PHILOSOPHY			
Philosophy	X	X	X
Scholastic Philosophy	X	-	-

TABLE II (continued)

Field	B. A.	M. A.	Ph. D
PHYSICAL SCIENCES			
Physical Sciences, general	X	-	-
Astronomy	X	X	-
Chemistry	X	X	X
Metallurgy	-	X	X
Physics	X	X	X
Earth Science: Geology	X	X	X
PSYCHOLOGY			
Psychology, general	X	X	X
Clinical Psychology	X	X	X
Educational	X	X	X
Experimental	X	X	X
Personality-Social	X	X	X
Counseling	X	X	X
Physiological	X	X	X
Statistics, Psychometrics and Mathematical Models	X	X	X
RELIGION			
Religious Education and Bible	X	X	-
Theology, First Professional	X	-	-
Theology, Master's and Doctor's	-	X	-
Religion-Liberal Arts	X	-	-
Religion, other	X	-	-
SOCIAL SCIENCES			
Basic Social Sciences:			
Social Sciences	X	X	-
American Civilization, American Culture	X	-	-
Anthropology	X	X	X
Area Regional Studies	X	-	-
Economics	X	X	X
History	X	X	X
Political Science or Government	X	X	X
Sociology	X	X	X
Basic Social Science, other	X	X	-
Applied Social Sciences:			
Agricultural Economics	X	X	X
Foreign Service Programs	X	-	-
Industrial Relations	X	X	X
Public Administration	X	X	X
Social Work, Social Administration	X	X	-
TRADE AND INDUSTRIAL TRAINING	X	-	-

TABLE II (continued)

Field	B. A.	M. A.	Ph. D.
MISCELLANEOUS			
Arts, General Program	X	-	-
Sciences, General Program	X	X	-
Arts and Sciences, General Program	X	-	-

Analysis of the Adequacy of Present Programs. Iowa is fortunate to have within its borders undergraduate degree programs in almost all of the traditional liberal arts and four-year professional curricula. (A complete list of degree programs is contained in Table III.)

The only gap of possible significance in programs at the undergraduate level would seem to be in the area known as four-year occupational curricula. Such programs, while including a strong emphasis on general education, include more specialized curricula than those typically found in undergraduate professional programs. Examples of these curricula include real estate, credit management, traffic management, and budget analysis in public administration.

Although Iowa offers a number of occupational curricula in areas such as agriculture, home economics, education, and the health professions, there are few if any similar programs listed in business and commerce, public administration, and certain engineering and industrial specialties. Some of these fields in all probability are included as concentrations within broader curricula. A more detailed analysis, not possible in the present study, is needed to determine the areas of emphasis within present programs and the possible need for additional undergraduate curricula.

An analysis of the enrollments in various undergraduate programs and courses in Iowa indicates that Iowa institutions of higher learning are making a reasonable attempt to effectively and efficiently utilize their present educational resources. Perhaps the most distinctive finding was the limited course offering of existing public junior colleges. The median number of baccalaureate level courses offered in public junior colleges for the fall semester of 1964 was forty and only three (25 per cent) of the reporting institutions offered more than forty-seven courses. In contrast, the average private liberal arts college, essentially a single-purpose institution, offered about 75 per cent more courses (sixty-eight vs. forty) than the average junior college at the freshman-sophomore level. If the public junior colleges are to fulfill the more comprehensive role advocated for them, they must significantly extend the number and scope of courses offered at the freshmen-sophomore level. The data again suggest the desirability of developing a relatively small number of comprehensive institutions.

The course enrollment data also indicate a dilemma for a number of the Iowa private colleges. Generally, these colleges have chosen to concentrate on a limited core of the traditional liberal arts; the median number of courses offered (142 for all undergraduate courses) represents a fairly vigorous pruning of the curriculum. Nevertheless,

TABLE III

TRENDS IN DEGREES AWARDED 1951 - 1963, IOWA AND U.S.[1]

	1951			1963			Per Cent of Change 1951-1963	
	Iowa	U.S.	Iowa as % U.S.	Iowa	U.S.	Iowa as % U.S.	Iowa	U.S.
Agriculture[2]								
B. A.	256	10,435	2.5	137	4,587	3.0	- 46.5	- 56.0
M. A.	39	1,308	3.0	27	1,076	2.8	- 30.8	- 17.7
Doctorate	20	362	5.5	29	408	7.8	+ 45.0	+ 12.7
Architecture								
B. A.	30	2,644	1.1	26	2,028	1.3	- 13.3	- 23.3
M. A.	3	203	1.5	1	356	0.3	- 66.6	+ 75.4
Doctorate	0	2	0.0	1	3	33.3	- - -	+ 50.0
Biological Science								
B. A.	219	12,892	1.7	313	19,218	1.7	+ 42.9	+ 69.1
M. A.	77	2,308	3.3	60	2,921	1.5	- 22.7	+ 26.6
Doctorate	37	767	4.8	43	1,455	2.6	+ 16.2	+ 89.7
Business & Commerce								
B. A.	985	58,237	1.7	945	53,684	1.8	- 4.1	- 7.8
M. A.	57	4,355	1.3	2	5,847	0.4	- 96.5	+ 34.3
Doctorate	12	65	18.5	1	250	1.2	- 91.6	+284.6
Education								
B. A.	1,064	61,644	1.7	2,137	102,796	2.1	+100.9	+ 67.0
M. A.	311	23,840	1.3	323	37,522	0.9	3.9	+ 57.4
Doctorate	22	1,028	2.1	50	2,075	2.4	+127.3	+101.8
Engineering								
B. A.	679	41,473	1.6	503	33,458	1.5	- 25.9	- 19.3
M. A.	116	4,825	2.4	108	9,635	1.1	- 6.9	+ 99.7
Doctorate	15	520	2.9	41	1,378	3.0	+173.3	+165.0
English, Journalism								
B. A.	422	19,208	2.2	533	30,357	1.8	+ 26.3	+ 58.0
M. A.	90	2,605	3.5	83	4,307	2.0	- 7.8	+ 65.3
Doctorate	8	284	2.8	12	527	2.3	+ 50.0	+ 85.6
Fine-Applied Arts								
B. A.	656	27,933	2.3	388	14,538	2.8	- 40.9	- 48.0
M. A.	191	4,578	4.2	138	3,363	3.1	- 27.7	- 26.5
Doctorate	24	177	13.5	32	379	8.4	+ 33.3	+114.1
Foreign Language and Literature								
B. A.	72	5,196	1.4	154	9,861	1.6	+113.8	+ 89.8
M. A.	20	1,193	1.7	17	1,961	0.9	- 15.0	+ 64.4
Doctorate	2	197	1.0	2	275	0.7	---	+ 39.6
Forestry								
B. A.	84	1,730	4.9	25	1,476	1.7	- 70.2	- 14.7
M. A.	- - -	260	- -	3	185	1.6	- - -	- 28.9
Doctorate	- - -	17	- -	2	41	4.9	- - -	+141.2

TABLE III (continued)

	1951			1963			Per Cent Change 1951-1963	
	Iowa	U.S.	Iowa as % U.S.	Iowa	U.S.	Iowa as % U.S.	Iowa	U.S.
Geography								
B. A.	5	704	0.7	12	1,122	1.1	+140.0	+ 59.4
M. A.	- - -	226	- -	2	274	0.7	- - -	+ 21.2
Doctorate	- - -	48	- -	1	61	1.6	- - -	+ 27.1
Health Professions (General)								
B. A.	263	11,156	2.4	272	8,919	6.0	+ 3.4	- 20.1
M. A.	31	1,223	2.5	62	1,365	4.5	+100.0	+ 10.9
Doctorate	3	111	2.7	9	157	5.7	+200.0	+ 41.4
Dentistry								
DDS & DMD	54	2,803	1.9	53	3,191	1.7	- 1.9	+ 13.8
Medicine								
MD Only	86	6,014	1.4	117	7,278	1.6	+ 36.1	+ 21.0
Nursing								
B. A.	11	3,705	0.3	114	6,526	1.7	+936.4	+ 76.1
M. A.	- - -	388	- -	2	659	0.3	+200.0	+ 69.9
Home Economics								
B. A.	282	7,903	3.6	220	4,463	5.2	- 22.0	- 43.5
M. A.	16	682	2.3	24	542	4.2	+ 50.0	- 20.5
Doctorate	4	20	20.0	7	45	15.6	+ 75.0	+125.0
Law								
B. A.	191	14,338	1.3	130	10,181	1.3	- 31.9	- 29.0
M. A.	15	497	3.0	- -	615	- -	-100.0	+ 23.7
Doctorate	- -	46	- -	- -	29	- -	- - -	- 37.0
Library Science								
B. A.	2	789	0.3	9	2,351	0.4	+350.0	+198.0
M. A.	- - -	1,172	- -	- -	474	- -	- - -	- 59.6
Doctorate	- - -	1	- -	- -	17	- -	- - -	+1600.0
Mathematics								
B. A.	155	5,753	2.7	338	16,121	2.2	+118.1	+180.2
M. A.	43	1,109	3.9	62	3,323	2.0	+ 44.2	+199.6
Doctorate	4	184	2.2	22	490	4.5	+450.0	+166.3
Philosophy								
B. A.	87	2,654	3.3	82	4,085	2.0	- 5.8	+ 53.9
M. A.	2	364	0.5	2	446	0.4	- - -	+ 22.5
Doctorate	- - -	84	- -	- -	134	- -	- - -	+ 59.5
Physical Science								
B. A.	448	20,986	2.1	249	16,276	1.5	- 44.4	- 22.4
M. A.	65	3,627	1.8	61	4,132	1.7	- 6.2	+ 13.9
Doctorate	62	1,704	3.6	69	2,380	2.9	+ 11.3	+ 39.7
Psychology								
B. A.	118	7,819	1.5	196	11,062	1.8	+ 66.1	+ 41.5
M. A.	38	1,645	2.3	32	1,918	1.7	- 15.8	+ 16.6
Doctorate	29	425	6.8	14	844	1.7	- 51.7	+ 98.6

TABLE III (continued)

	1951			1963			Per Cent Change 1951-1963	
	Iowa	U.S.	Iowa as % U.S.	Iowa	U.S.	Iowa as % U.S.	Iowa	U.S.
Religion								
B. A.	72	6,480	1.1	154	8,836	1.4	+113.9	+ 36.4
M. A.	4	1,256	0.3	8	1,171	0.7	+100.0	- 6.8
Doctorate	-	257	- -	6	276	2.2	- - -	+ 7.4
Social Science								
B. A.	1,122	45,163	2.5	1,300	67,840	1.9	+ 15.9	+ 50.2
M. A.	108	6,715	1.6	80	8,370	1.0	- 25.9	+ 24.7
Doctorate	30	992	3.0	38	1,536	2.4	+ 26.7	+ 54.8
Trade and Industrial[4]								
B. A.	52	3,394	1.5	5	1,687	0.3	- 90.4	- 50.3
M. A.	--	448	- -	- -	32	- -	- - -	- 92.9
Doctorate	---	10	- -	- -	7	- -	- - -	- 30.0
General Education								
B. A.	8	2,876	0.3	185	6,261	2.3	+2,212.3	+117.7
M. A.	3	305	1.0	31	921	3.4	+933.3	+202.0
Doctorate	1	40	2.5	- - -	55	- -	- - -	+ 37.5
Total								
B. A.[3]	7,421	384,034	1.9	8,592	448,202	1.9	+ 15.9	+ 16.7
M. A.[3]	1,231	65,132	1.9	1,128	91,418	1.2	- 8.4	+ 40.4
Doctorate[3]	273	7,338	3.7	379	12,822	3.0	+ 38.8	+ 74.7

[1] Sources: U.S. Office of Education - Earned Degree Conferred 1962-63, U.S. Government Printing Office, Washington, 1965, Circular No. 777.

U.S. Office of Education - Earned Degree Conferred 1950-51, U.S. Government Printing Office, Washington, February 1952, Circular No. 333.

[2] B. A. includes all first professional degrees requiring five or more years.

[3] Neither totals nor sub-groups include military or naval science.

[4] Classified as industrial arts only - included in trade and industrial.

the term liberal arts covers such a wide range of fields that to offer even a cross section of courses for majors in the typical small private college implies that many junior and senior courses will have limited enrollments. It is therefore not surprising that the average upper-division course enrollment in private liberal arts colleges was eighteen,[4] and 38 per cent of the upper-division courses enrolled less than ten students.

The course enrollment figures for the public four-year institutions are reasonable generally. That, in fall, 1964, these three institutions could offer some 1,288 undergraduate courses in a wide variety of fields and still maintain an average course enrollment of ninety-one reinforces the principle of developing large comprehensive institutions.

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[4] This figure excludes individual instruction, which is a major component of the upper-division curriculum in several of the private liberal arts colleges.

Nonetheless, at the two public universities 9 per cent of the freshman-sophomore courses and about 25 per cent of the junior-senior level courses enrolled less than ten students. More recent data (1966) shows that courses enrolling less than ten students have dropped to about 7 per cent at the freshman-sophomore level and to about 17 per cent of the junior-senior level courses.

Library Resources. Basic to any quality undergraduate degree program is an adequate library. The American Library Association recommends 20,000 volumes for the smallest junior college and 50,000 for a small four-year liberal arts college, with recommended increase commensurate with increases in enrollment. None of the existing public junior colleges were within 5,000 volumes of the minimum junior college figure as of the fall of 1964, and only one of the three reporting private junior colleges approached 20,000 volumes. Only 50 per cent of the private four-year institutions met the A.L.A. standards for college libraries. In view of this neglect of a vital instructional resource in many Iowa institutions, sizable increases in library holdings should be given a major priority in the planning of community colleges and four-year liberal arts colleges.

Graduate and Advanced Professional Instruction

In a society which relies increasingly upon new knowledge for its advancement, graduate and advanced professional education has become not only the key to the improvement of other levels of education through the training of teachers, but an essential element in the improvement of the society itself.

By its very nature, graduate education is of national and international significance. At the level of graduate education particularly, Iowa institutions discharge responsibilities to the citizens of the state, and, in addition, become part of a federation of institutions and organizations charged with carrying out educational tasks necessary to the welfare of the country as a whole.

Graduate Degree Trends. Graduate education in Iowa is limited to a few institutions which have chosen to channel their resources into somewhat selected areas. Generally this channeling is a rather healthy sign, indicating that Iowa institutions, not blessed with unlimited resources, have chosen to allocate those resources where they will generate the maximum educational benefits through quality programs. The emphasis on selective development of programs at the graduate level, however, must be balanced with the continuously expanding needs of the state for post baccalaureate education in almost all fields.

In 1963, Iowa, with approximately 1.5 per cent of the nation's population, awarded 379 degrees, or 3 per cent of all U.S. doctoral degrees, but only 1,128 (1.2 per cent) of the master's degrees. For Iowa, this represented a 39 per cent increase over 1951 in the number of doctorates awarded, compared with a 75 per cent gain for the nation as a whole; and an 8 per cent decrease in the number of master's degrees, contrasted with a 40 per cent gain for the United States. (See Table II.)

Iowa in 1963 awarded more than 3 per cent of the nation's master's degrees in fine and applied arts, the health professions, and home economics. Iowa conferred very few master's degrees in the fields of architecture, business, and nursing; in law and library science there were no master's degree programs.[5]

The state declined in the number of engineering master's degrees by 7 per cent from 1951-63 while the nation was experiencing a 100 per cent increase, and in business and commerce Iowa granted only two degrees in 1963. In teacher education Iowa experienced a 4 per cent increase from 1951-63, compared with a 57 per cent increase for the United States as a whole.

In other states the expansion of programs at the master's degree level has taken place within state colleges as well as the universities. Perhaps the absence of a regional system of state colleges in Iowa accounts for the relative lack of emphasis on applied professional programs. For reasons noted later in the chapter, however, it is recommended that, rather than establish new state colleges, the present Regents institutions and perhaps a few private schools should increase their emphasis on master's degree programs.

A second reason for the increase in master's degree awarded in some other states has been the ability of these states to provide courses in off-campus locations close to employed persons pursuing graduate education on a part-time basis. This is not true in Iowa as the data contained in the extension section reveal. In fields such as teacher education, Iowa institutions have moved very slowly in off-campus graduate instruction compared with some other states.

At the Ph.D. level, recalling that Iowa's total Ph.D. output (3 per cent of the U.S. total) was double its per capita rate, Iowa awarded more than 4 per cent of the nation's doctorates in agriculture, architecture, forestry, fine and applied arts, the health professions, home economics, and mathematics. Iowa awarded doctorates at less than its per capita rate in only five fields: business and commerce, foreign languages, philosophy (where it produced no doctorates at all in 1963), and in law and library science where no Ph.D. programs exist.

Analysis of Present Programs. A comparison of the graduate degree programs presently offered in Iowa with lists compiled by the U.S. Office of Education reveals that Iowa offers degree programs in most of the broad subject areas. As at the undergraduate level, there are some occupational or applied areas, particularly in the more specialized areas within business, public, and industrial administration, without formally designated master's programs. Some of these areas undoubtedly exist as program emphases within broader degree programs, but a more detailed analysis was not possible in the present study.

At the doctoral level, additional evidence is available on the quality of Iowa's programs. At this level especially, the true test of institutional quality lies in the nature of the intellectual atmosphere generated by outstanding scholars and carefully selected students working as partners in the advancement of knowledge. Such an analysis was not within the scope of the present study, but, fortunately, a recent nation-wide study provides relevant data for the two Iowa institutions granting doctorates. This study, sponsored by the American Council on Education (Cartter, 1966) was based upon a survey of leading graduate educators and scholars. The results of the survey were then used to rate 106 major graduate institutions from less than adequate to distinguished in twenty-nine graduate subject areas.[6]

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[5] The University of Iowa has now established a graduate school of library science.

The U of I and ISU together offered forty-one doctoral programs in the twenty-nine areas rated by the ACE. Of these forty-one programs, none received a distinguished rating, three (7 per cent) were rated as strong, nineteen (46 per cent) were rated as good and nine (22 per cent) adequate plus. By elimination, ten (25 per cent) of the programs were rated less than adequate. Thus, while slightly more than half (53 per cent) of the Iowa graduate programs were rated good or better, one-fourth were rated less than adequate.

Admitting that such results must be interpreted with great caution, a reasonable conclusion would be that although Iowa can be pleased with the favorable rating given most of its graduate programs, there is major cause for concern over: 1) the relative absence of very strong or distinguished programs, and 2) the fact that between them the two universities have not developed "adequate" programs in at least seven (24 per cent) of the twenty-nine areas rated. Iowa cannot expect to compete with the strongest universities in all major fields, but it should be able to develop strong programs in a few areas, and adequate programs in the remainder.

Analyses of legislative requests by the two Regents universities reveal that requests for funds to strengthen graduate programs have been made almost continuously without notable success. Since the existence in the state of doctoral programs of recognized excellence has numerous beneficial effects in addition to the actual production of doctor's degrees - in attracting talent to the state, in making readily available to Iowa citizens valuable technical and professional services based on new knowledge growing out of the related research programs, and in stimulating and enriching the economic and cultural life of the state generally - Iowa citizens, through their legislative representatives, should make a substantially greater investment in support of these programs.

For some 890 graduate courses at the three public graduate institutions and Drake, the average course enrollments of thirteen to fifteen seem quite reasonable and are comparable to those found in studies in other states.[7] In fact, the size of the graduate and advanced professional course enrollments in some subject areas suggests a need for a more detailed study to determine if Iowa graduate institutions might be somewhat understaffed.

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[6] Allan J. Cartter, Assessment of Quality in Graduate Education, American Council on Education, 1966. The twenty-nine areas selected do not necessarily represent an adequate sampling of all graduate programs in Iowa. The U of I offers more than fifty doctoral programs, and ISU more than forty, including relatively strong programs not evaluated by the ACE Study.

[7] In fall, 1964, there were also 629 courses open to both graduates and undergraduates at the Regents schools, with an average course enrollment of thirty, and eighty-eight courses at Drake with an average enrollment of thirty-two.

It is evident that State College of Iowa and Drake are offering master's degrees programs with many courses also open to undergraduates. In the fall of 1964, State College offered 167 courses open to both graduates and undergraduates and thirty-four open only to graduates. Drake offered eighty-eight courses open to graduates and undergraduates and twenty-five open only to graduates. Both of these institutions need additional funds to develop more graduate-level courses for admission to which an undergraduate degree would be a prerequisite.

Library Resources. An examination of the resources of the institutions now offering most of the graduate instruction in Iowa suggests that Iowa graduate institutions have a major job in building their library holdings. The University of Iowa has less than one-third the holdings of the top four to five university libraries in the United States, while ISU must increase its holdings dramatically if it is to develop as a comprehensive university.

The two institutions offering master's degrees perhaps fare a little better in comparison to similar institutions, but both of these institutions must increase their library resources significantly if they are to diversify their graduate offerings.

Since the library is the heart of most graduate programs, high priority should be given to substantially increasing library resources in Iowa graduate institutions.

Extension and Public Service

Extension and public services are especially important in Iowa for several reasons:

1. Although Iowa's population is beginning to concentrate in a relatively small number of metropolitan areas, the phenomenon of metropolitanization is not as great as it is in many other states. Thus, large numbers of Iowans will continue to live in areas which cannot be served completely by local institutions.
2. Iowa's business and social institutions often are not in a position to develop the extensive continuing education opportunities and consulting and technical services found within major corporations and other organizations in the more populated states. Through tax support, and through direct payment for certain programs, business and government in Iowa have chosen in many cases to place the responsibility for service programs in educational institutions.
3. Iowa's people are the state's major economic resource. If Iowa is to compete successfully with other states, there is an obvious need for continuing education and retraining and for professional services to smaller corporations and other organizations.

Extension Classes. Extension classes may be located on campus as well as off. The number of classes offered from September 1, 1965, through August 30, 1965, and their enrollments are shown in Table IV.

TABLE IV

EXTENSION CLASSES

By Number of Classes, Registration, Level of Instruction,
Type of Instruction 1964-65

Institution	College Level Degree Credit Undergrad. No. Class	Regis	Graduate No. Class	Regis	Non-Credit No. Class	Regis	Less than College Level(1) No. Class	Regis	Total(1) No. Class	Regis	No. of On-Campus Classes Open to Part-time Students(2)
Public 2-yr.	61	836			69	1,282	291	5,582	421	7,700	345
Private 2-yr.											6
Public 4-yr.	51	919	68	1,792	171	4,446	375	32,760	665	39,917	335
Private 4-yr.	408	9,333	96	1,960	6	206	1	15	511	11,514	437
Grand Total	520	11,088	164	3,752	246	5,934	667	38,357	1,597	59,131	1,123

[1] Includes short courses, conferences, and institutes.

[2] Number of regular on-campus classes open to and scheduled at times convenient to part-time students. (Late afternoon, evening, and Saturday.)

The fact that 59,000 persons enrolled in extension programs in a single year is often overlooked in describing the role of Iowa's colleges and universities, yet extension and service is one of education's major functions at the post high school level. The present extension enrollments barely suggest what likely will take place in the next few years. Most of adult education, although post high school by definition, is carried out now in secondary schools and is not reported in Table IV. For example, in 1965 there were 36,770 enrollments in adult supplementary courses, mostly in programs operated by secondary schools. With the need for retraining and continuing education at the vocational-technical level, the enrollments in short supplementary programs will probably increase significantly, and in the future many of these programs are likely to be a administered through the merged area community colleges and vocational-technical schools. The Regents institutions similarly will increase their extension offerings, particularly in graduate education and in continuing education in professional areas such as the medical professions, business administration, and education.

The geographic location of degree credit extension courses, both on campus and off, is reported in Figure 1. The chart reveals the major concentration of extension courses in the more populated eastern portion of the state. This distribution occurred because: 1) private colleges and public junior colleges, which are located primarily east of Des Moines, confined extension courses almost entirely to their home campuses (Drake

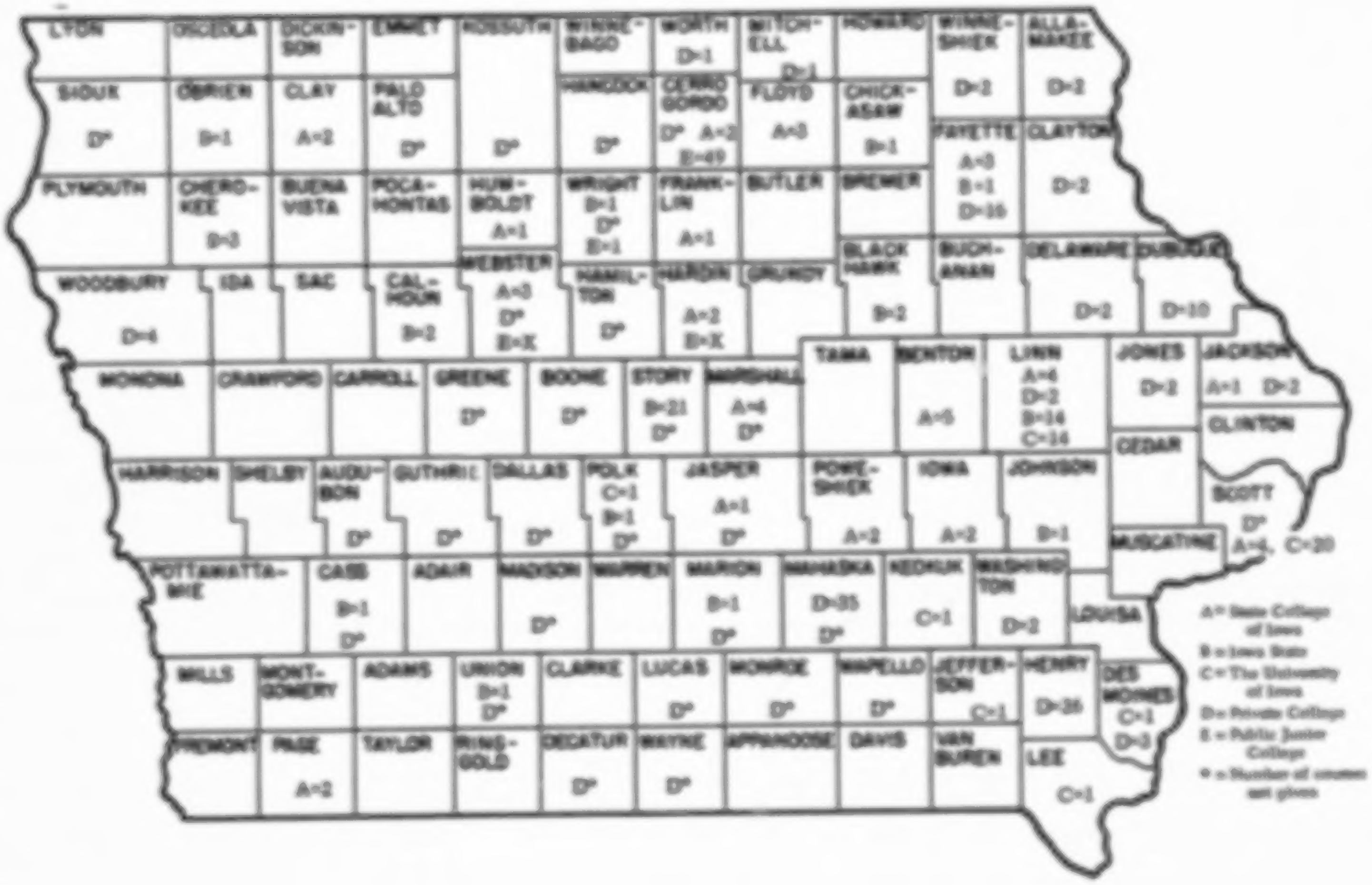

Figure 1

LOCATION OF UNDERGRADUATE AND GRADUATE DEGREE CREDIT EXTENSION CLASSES, 1964-65

University was a major exception, offering courses throughout north central and south central Iowa); and 2) The Regents institutions located most off-campus courses in the eastern part of the state where the demand was greatest and where reasonable numbers of students could be secured. Because of inadequate funds, these courses must be essentially self-supporting.

Iowa's extension offerings in off-campus locations are described further in a recent survey by the North Central Association (Davis, 1966). The survey reported off-campus degree credit extension enrollments for the 1964-65 academic year in the sixteen-state North Central area. According to the survey, Iowa ranked fourth in the sixteen-state area in the number of off-campus extension locations with ninety-six locations. This placed the state ahead of such states such as Wisconsin, (ninety-four locations), and Indiana, (seventy-four locations). In contrast, Iowa ranked eleventh in the number of off-campus extension enrollments with 3, 588 enrollments. Iowa reported less than one-fourth the number of off-campus enrollments of similar states such as Minnesota (16, 718 enrollments), and Wisconsin (18, 232 enrollments).[8]

This combination of a large number of locations with small enrollments placed the state last among the sixteen states in average enrollment at each location. Iowa's average enrollment of thirty-seven at each of the off-campus extension locations was less than one-fourth the sixteen-state average of 170 enrollments. Although a greater geographical distribution of off-campus courses must be made in Iowa, it probably should involve a smaller number of locations in which resources can be placed to assure adequate programs.

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[8] Richard H. Davis, "Off-campus Programs at NCA Colleges and Univesities", North Central Association Quarterly, 40: No. 4, Spring, 1966.

In summary, Iowa is past the point where adequate extension education can be maintained by institutions offering a few courses in widely scattered locations, overlapping some areas, while not serving others. A plan must be developed to distribute educational opportunities to all sectors of the state, but at the same time concentrating courses in a relatively small number of locations to secure reasonable quality. To attain this goal, there must be a state plan for extension involving all interested institutions and providing significant state subsidies for the geographical distribution of courses to areas where a sparse population precludes substantial income from tuition.

Public Service. Public service activities tend to reflect the institutional purposes of the colleges and universities surveyed. The community or junior college concept of public service is different from that of the four-year institutions. The junior colleges, both public and private, tend to be involved only in speaker and lecture series, drama, and musical offerings available to the public in the nearby communities. With the exception of Drake University, the private four-year colleges tend to provide consultant services to schools on a limited scale, with lecture series, drama, music, and art exhibitions largely serving the community in which the colleges are located. Some private colleges also provide speakers and other services to their church constituencies and other sponsoring groups.

Statewide services are offered almost exclusively by the three Regents institutions, and Drake University. Clearly the overwhelming share of extension and public service activities are carried on by these four institutions. Of slightly less than eight and one-half million dollars expended for extension and public service activities in 1964-65, over 95 per cent was spent by the Regents institutions and half of the remainder by Drake University. Drake's primary emphasis has been on its University College which provides evening and Saturday classes for people in the Des Moines area.

The use of extension methods and programs to attack community, county, and state social, economic, and governmental problems is thus heavily concentrated in the Regents institutions. These institutions have organized units to work in the several public service areas. Examples of such service units include: Iowa State University's Cooperative Extension Service in Agricultural and Home Economics with some 425 staff distributed throughout the state, the Engineering Extension Service, and the Center for Industrial Research and Service. The University of Iowa supports the Institute of Public Affairs, the Urban Community Research Center, the Center for Labor and Management, the Audiovisual Center, and the Iowa Educational Information Center, State College of Iowa has its Division of Field Services and Extension Service Bureau offering resources, particularly to the public schools in Iowa. State College, along with the other two Regents institutions, is also involved in radio and television broadcasting and correspondence courses.

While some public service activities provided by Iowa institutions (such as Cooperative Extension from Ames) serve the entire state, many such activities tend, as would be expected, to be more concentrated in the areas of the state which have the greatest population and economic growth - from which come the greatest demands. The lack of certain public services in the western part of the state results, it appears, not from lack of need, but from inadequate institutional resources, distance, and the fact that needs are so scattered as to be difficult to serve.

There appears to be need for a more coordinated state-wide extension and public service program. The framework for such a program is now contained in the requirements of Title I of the Higher Education Act of 1965 and the Technical Services Act of 1964. The cooperative features of these Acts have received an early implementation through the development of a Statewide Extension Council, responsible to the Board of Regents. Whether this voluntary coordination will do the job remains to be seen, but with the demand envisaged for extension and public services, a well-coordinated program is imperative.

One effective way to distribute extension classes and other public services more widely would be through the establishment of a statewide educational television network. While such a proposal is far too detailed to be described in the present report, early and careful consideration should be given to the establishment of such a television network.

Research

The Role of Research. A fundamental emphasis throughout the report has been the preparation of Iowa's young people for a world which will be increasingly dependent upon new knowledge for its social, cultural, and economic development. To achieve this goal requires not only quality education at all levels, but the continuous advancement of knowledge itself through vigorous programs of research. Universities through support of research and the training of research scholars become the primary institutions in our society charged with the task of producing new knowledge. Research by its very nature is expensive and must be encouraged and supported with adequate funds. Support of research at selected institutions provides immeasurable returns to society in several fundamental ways:

1. Research and creative activity lie at the heart of education. Without adequate investment in material and manpower for research the quality of the universities would decline. Without active research programs many of the best professors are drawn to institutions where there are active research programs. Without outstanding professors the universities cannot attract the best students. High-quality graduate students are attracted by research funds. Many of these students are used to help teach students in the lower division of the various colleges. If the number and quality of the teaching assistants decline, the quality and quantity of graduate teachers from which the community colleges and other colleges select their teachers will suffer. It is quite clear, therefore, that the educational fortunes of the state are delicately intertwined and must be understood and supported as a whole, including the key activity of research.

2. Research is the principal means for the advancement of knowledge. Most research activities fall along a continuum ranging from studies which may initially appear

of no practical significance, but are designed to discover new knowledge, to projects designed to solve specific problems. The former types of research are usually described as pure or basic research and the latter forms are often labeled applied research. Iowa universities have made significant contributions to knowledge in both its pure and applied forms. Examples of such contributions range from basic research into the nature of the earth's atmosphere and laboratory studies of how learning occurs, to applied studies which have led to greater beef production through improved breeding, and the treatment of Parkinson's disease by ultra-sonic waves.

3. Research is a fundamental tool of instruction at the advanced graduate level. Although many persons with advanced graduate degrees will not engage in research, research training must be a substantial portion of their education if they are to understand and utilize current knowledge. Support of research provides a double return to society, since a large share of the funds are used to support promising graduate students on research assistantships.

4. Public services and business and industry can be improved by their relationship to on-going research programs. Many aspects of farming have been improved through the agricultural extension services which disseminate the latest research findings available from the College of Agriculture at Iowa State University. All fields of endeavor from engineering to medicine to public school teaching to good government are enhanced by the relationship of service units at the Regents schools which are carrying on research programs and disseminating the findings throughout the state and the nation.

Present Status of Research in Iowa. During the past two years more than twice as many dollars for research at the state universities have been provided from outside sources as come from the appropriations of the State Legislature. State appropriations are a measure of commitment to research programs and are usually necessary to secure the outside money. The problem of research finance is urgent: without increasing support from the state, outside sources may be discouraged and place their funds elsewhere. Moreover, state funds are essential to the stability of programs, for national needs and funds fluctuate in amounts and directions. State appropriations for research are essential.

Of the fifty-one colleges and universities in the State of Iowa, thirty-nine received some type of federal support. The total federal support from eight federal agencies for these institutions was $27,168,000 in fiscal 1965 (about 40 per cent of this money is for basic research). Eighty-one per cent of this money was received by the state's largest institutions, The University of Iowa ($12,465,000) and Iowa State University ($9,559,000). The University of Iowa and Iowa State University were among the 100 universities and colleges receiving the largest amounts of federal support in 1965.[9] The University of Iowa ranks 52nd and Iowa State University 68th out of the one hundred universities and colleges just mentioned. While this showing is quite good, it would not seem amiss for these institutions to try to improve their positions in the years ahead.

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[9] Source: National Science Foundation "Federal Support for Academic Science and Other Educational Activities in Universities and Colleges, Fiscal Year 1965.

Future Needs. Iowa can be reasonably proud of some of its distinguished achievements in research. To continue this development in face of other demands upon university funds, and with a constantly accelerating demand for new knowledge, will require vigorous effort to maintain a high level of support for research. While the amounts of money needed and the areas in which they might be used cannot be specified with precision, a few of the broad areas of need can be described:

1. The most important task is to expand the base of support for research. This can be accomplished by providing a base of personnel and facilities from which to attract new outside funds. Faculty salaries, particularly at the higher ranks, must be competitive. It is the full professors who typically initiate and direct major research projects. The state must provide for research facilities, equipment, assistants, and library resources, as well as office and research space if Iowa's institutions are to continue to develop research programs which attract outside funds.

2. Research in areas where outside funds are not readily available. Although federal sponsorship of research is broadening to include many fields, the major funds are still allocated to those areas of most direct concern to the national welfare; e.g., defense, public health. Additional state and foundation funds must be provided in the social and behavioral sciences, and in the humanities particularly, to counteract the growing imbalance in research support for various fields. Additional monies will be needed also for research in subjects of special interest to Iowa. The organizations of governmental units and the problems of social welfare in rural areas are examples of two areas of major concerns to Iowa. An additional area, not typically supported by outside funds, is support for small exploratory projects. Iowa institutions provide relatively little "seed money" for projects which are of uncertain value, but from which develop the more productive major research activities.

3. The expansion of research. Many areas of research, particularly in the sciences and engineering, require extensive facilities and supporting personnel so it is not surprising that much of the research is concentrated in the two largest state institutions. According to the financial data in Chapter X the direct support of organized research at the two public universities was more than $1,000 per faculty member, while at all other private and public four-year institutions the level of support averaged less than $15 per full-time faculty member.[10]

Although research should not become a major preoccupation at all institutions, the general enhancement of the academic environment and the incentive for qualified faculty to pursue research suggests that State College of Iowa, Drake University, and many of the private colleges should make greater efforts to support faculty research. Several of these institutions might consider establishing consortiums with similar institutions, or with the larger universities, to purchase or at least to gain access to the more expensive research facilities.

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[10] Many of these institutions have made a considerable effort to support faculty research through sabbaticals, research leaves, and the provision of equipment and other resources. Because most of these funds have come from general institutional sources, they are not defined as "organized research" and are excluded from the present discussion.

4. Assistance to Iowa business, industry, and agriculture in research and development. Nationally, a high percentage of applied research and most of the development of new products and services is carried on by business and industry. There is need for a strong link between the basic and applied research activities of Iowa universities and the Iowa corporations which are interested in exploiting such research. Several possibilities might include: a) the development of industrial areas around educational institutions where businesses might draw upon nearby talent and resources; b) institutions, alone or through consortiums, might establish non-profit corporations to provide consulting and technical services to business and industrial clients. Such corporations would have their own staffs and facilities, but would draw upon the more specialized resources of the institutions when necessary. The precedents for such corporations are found in other states and in the several non-profit corporations affiliated with The University of Iowa which offer technical and consulting services to educational institutions.

Summary of The Major Tasks of Post High School Education in Iowa

The appraisal of Iowa's present educational programs and allied functions may be summarized in terms of two broad future tasks of post high school education. These tasks are:

1. The Maintenance and Advancement of Present Programs. Although there exist significant needs for new and different programs, the major growth in the next fifteen years will still occur in those undergraduate and graduate areas, research, and service, which now constitute the major components of Iowa post high school education. The state's most important task is to insure that the initiation of new programs and functions will not be at the expense of quality of present programs or curtail the expansion of these programs to serve significantly greater numbers of Iowa citizens.

2. A Major Emphasis Upon Selected Critical Areas. To meet the educational challenge which Iowa now faces, the state should devote significantly increased attention to:

   a. The major expansion of vocational-technical education. Throughout the entire report the evidence points to the need for a great increase in the number and quality of vocational-technical education programs. The legislature has appropriated limited funds which, combined with federal monies, provide a modest beginning to what should be a greatly expanded program.

   b. A substantial increase in the state's commitment to excellence at the advanced graduate level. If Iowa is to maintain, let alone increase, its position in this critical area, a substantially increased financial commitment from the legislature must be forthcoming. This increased commitment must permit more than an increase in the number of students served; it must substantially advance the quality of certain doctoral programs offered in the state.

   c. Increased extension and other public services. Much has been done by some educational institutions in certain fields. Indeed, some forms of service in agriculture, home economics, and consultation with the schools have been models followed in other states. However, there is much more to be accomplished in making services available to business, industry, communities, and other segments of the state.

d. A more equitable, geographical distribution of those educational programs which serve the greatest numbers of Iowa citizens. The location of present institutions and the survey of extension and other public service offerings suggest that significant numbers of Iowa citizens are not now securing the full share of educational opportunities available to those more favorably located. Programs which must be more widely distributed include: a) vocational-technical education, b) opportunities for undergraduate education at the freshman and sophomore level, c) adult and continuing education, and d) those components of master's degree programs which can be offered in off-campus locations.

e. An analysis of the need for additional baccalaureate and post baccalaureate occupational curricula. The development in certain states of occupational curricula which are narrower and more applied than the traditional liberal arts and professional programs results from the emergence of new specialties and from the development of non-degree occupations into higher-level specialties, e.g., nursing, municipal administration. A careful study of these new programs and their potential demand seems essential.

Section B: A Proposed Pattern of Post High School Education for Iowa

Major Features of the Proposed Pattern

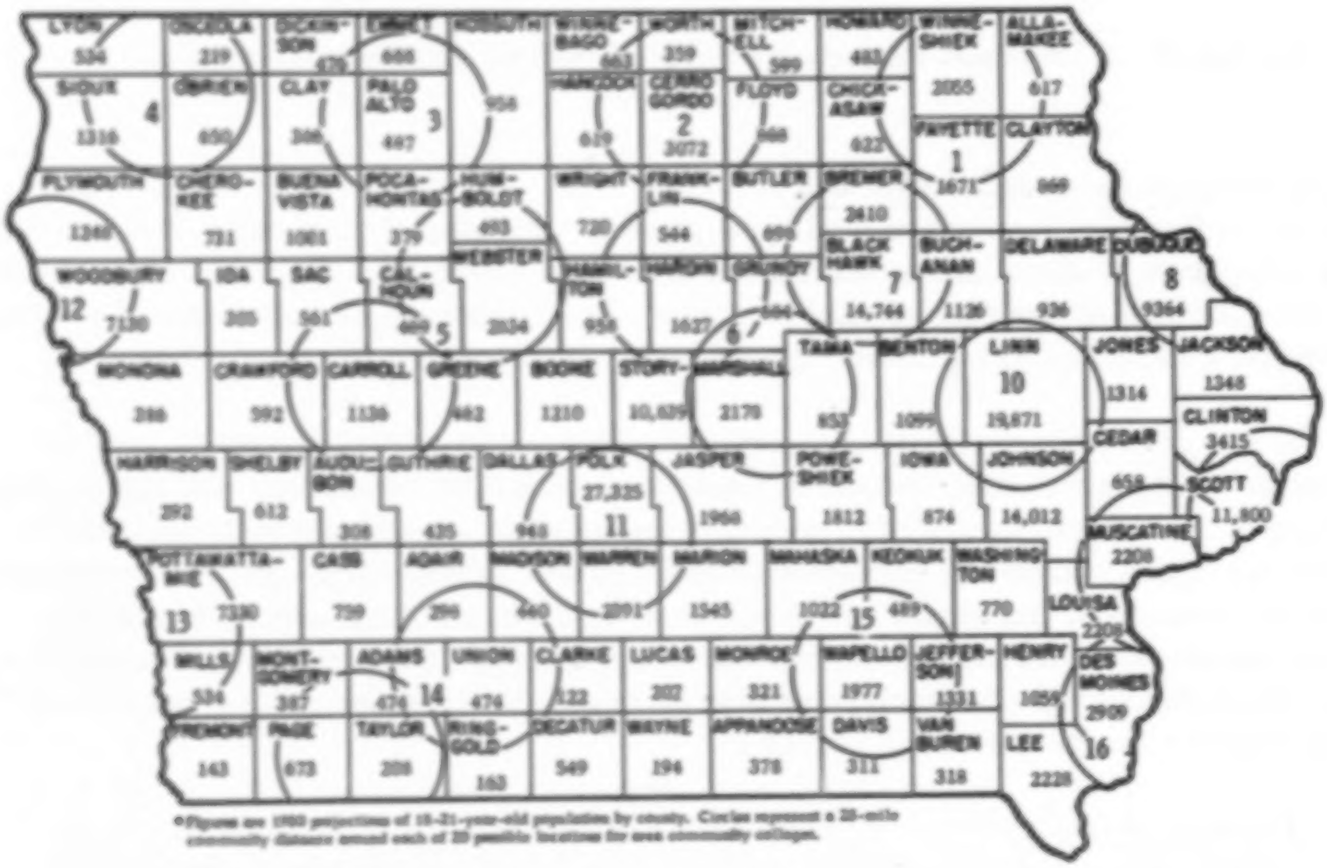
To insure the advancement of quality of present educational programs, the expansion of these programs to serve increased numbers of Iowa youth, and the development of the five areas specified as needing special attention, Iowa's pattern of post high school education should emphasize in the future the following features:

1. A system of comprehensive community colleges to secure the much needed expansion and geographic distribution of vocational-technical education, and the geographic distribution of opportunities for undergraduate education at freshman-sophomore level, and adult and continuing education in appropriate fields. The community college would become the most important new component in Iowa post high school education. The development of a well-supported system of community colleges is recommended over the much-discussed alternatives of new four-year institutions and/or vocational-technical schools for the following reasons:

    a. Equality of opportunity. Every Iowa citizen should have the opportunity to pursue reasonable educational goals. Equality of opportunity is not limited to the opportunity to pursue a traditional four-year program, nor to the opportunity to pursue a limited number of vocational-technical objectives alternatives. The community college, located close to students and providing a wide range of educational opportunities, insures that all reasonable goals may be pursued by all Iowa citizens regardless of economic level or geographic location.

    b. Proximity to all Iowa Citizens. An analysis of the 1960 census revealed that 75 per cent of Iowa's youth age 18-21 would live within approximately twenty-five miles of twenty strategically located community college attendance centers and that this proportion would probably rise to 85-90 per cent by 1980. A map showing twenty possible locations for such centers and the number of 18-21-year-olds by county projected to 1980 is included as Figure 2. (The locations shown are not recommended sites; they are included for purposes of illustrating what might be accomplished by a system of twenty attendance centers. The actual determination of sites would involve far more analyses than have been possible in the present study.)

    c. A long-range view of the Iowa economy and of the state's manpower needs. Because of the shift in Iowa from a predominantly rural agricultural economy to an increasingly urban and industrial pattern, there is an immediate need for essentially vocational training for many of Iowa's youth. In moving to a more industrialized economy, however, the state is just beginning a series of steps in economic growth. Iowa should plan on a continued shift toward higher-level vocational-technical requirements of which the post high school vocational trend is but one phase.



*Figures are 1980 projections of 18-21-year-old population by county. Circles represent a 25-mile commuting distance around each of 16 possible locations for area community colleges.

Figure 2

POSSIBLE LOCATION OF AREA COMMUNITY COLLEGES SHOWING PROXIMITY TO 18-21-YEAR-OLD POPULATION PROJECTED TO 1980*

d. Economy of operation. Iowa's educational and financial resources will be taxed just to provide the undergraduate and vocational-technical programs needed in the next decade. By developing only one central administration and by sharing of faculties and facilities among a variety of programs, the community college can achieve a more efficient utilization of funds than a dual system of vocational schools plus new state colleges and/or junior colleges.

2. Continued centralization of upper-level undergraduate, graduate, and advanced professional programs and allied functions in existing public four-year institutions, to maintain and advance the quality of present programs, especially those at the higher educational levels, and to assure the substantial increase in excellence at the advanced graduate level. The quality of educational programs, especially at the higher educational levels, cannot be maintained within limited potential resources if these resources are spread thinly across a system of small regional institutions. Several of Iowa's neighbor states have made the error of trying to do just this and are now paying the price of having to support institutions which are not only inappropriate to the educational tasks required of them, but which also draw away resources from institutions which could meet these expanding needs.

To offer the kinds of specialized training needed at the baccalaureate level, and particularly at the post baccalaureate levels, requires extensive physical and human resources. Moreover, the constantly changing relationships of educational programs and allied research and service activities mandates that extensive resources be available on a single campus as modifications in curricula and research programs occur and as demands for new programs and services develop.

3. A greater diversity of educational opportunities to be offered within existing public four-year institutions at the baccalaureate and post-baccalaureate levels, to bring about an increased emphasis upon applied and professional master's degree programs and other forms of continuing education, and the continued analysis and possible development of additional baccalaureate and post-baccalaureate occupational curricula. As a corollary to the continued centralization of many functions in existing four-year institutions, the state must rely on these institutions for certain new and expanded programs which are often delegated to regional state colleges elsewhere. Because the needs of the state mandate that the public universities in Iowa enlarge their span of services at almost all levels, the Regents schools will be somewhat unlike their counterparts in more populated states. These latter institutions have chosen to focus almost entirely upon activities at the highest educational levels and to delegate the remainder to regional state colleges and community colleges.

This difference between Iowa and several other states was noted several years ago by T. R. McConnell in his comparison of various state patterns of higher education. According to McConnell: ". . . Iowa would find it difficult to adapt the California or Michigan system to its own needs. Its two universities[11] will probably have to continue through extensive internal differentiation to serve the types of students and to provide the variety of educational services that could be more fully distributed among (several) institutions in another state."

This proposal for a greater diversity of opportunities to be offered within existing institutions does not mean that all Regents institutions should diversify to the same degree. Indeed, more careful study by the Board of Regents may indicate that the most efficient use of resources would be for certain institutions to diversify their offerings, while one or more others might actually restrict their range of activities and concentrate on programs and services at the more advanced levels of graduate and professional education.

4. A well coordinated system of extension and other public services to secure expansion and more equitable geographic distribution. Because of the need to centralize on-campus programs in existing public four-year institutions, extension and other public services take on more importance in Iowa than they do in states with a system of regional state colleges. To accomplish the tasks required of extension and public services within the resources potentially available requires that Iowa's educational resources be coordinated into a state system of extension and public services. Whether such a system can be developed through voluntary coordination is up to the participating institutions, but such coordination must involve all public institutions and should provide significant encouragement and incentives for the participation of private institutions as well.

5. The maintenance and advancement of existing private colleges as a viable alternative to public education for significant numbers of Iowa youth. To secure the

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[11] T. R. McConnell, A General Pattern For American Public Higher Education, McGraw-Hill, New York, 1962. SCI was a teachers college at the time of the McConnell report.

geographical distribution of advanced undergraduate and certain graduate and professional programs, and to insure the maintenance of a diversity of opportunities which characterize a quality pattern of post high school education, Iowa's private colleges and universities must be strengthened significantly. Private institutions in Iowa perform a number of the major functions of regional state colleges in other states.

The general features of any state-wide pattern of post high school education take form only insofar as they can be implemented within particular institutions and groups of institutions. For this reason, the remainder of the chapter is devoted to a more detailed discussion of the role of various types of institutions in the future development of education beyond the high school in Iowa.

The Role of Each Type of Institution in the Proposed Pattern for Iowa

1. The Public Community College

To perform the major role envisaged for them in this study, Iowa community colleges must become comprehensive institutions offering a broad range of educational opportunities including:

a) Undergraduate education at the freshman-sophomore level for those planning to transfer to a four-year institution.

b) Vocational-technical education of two years or less for those seeking immediate employment.

c) General education for all students to enhance the quality of their personal lives and promote their effectiveness as citizens.

d) Adult and continuing education, including occupational retraining and general education for all citizens through a variety of workshops and conferences, as well as formal classes.

e) Public services, including technical and consulting services in appropriate areas and cultural presentations.

Although a comprehensive institution is advocated, Iowa's educational priorities mandate that vocational-technical education receive the major emphasis in the early development of community colleges. Iowa community colleges will be "open-door" colleges in the true sense of the word. At least some educational opportunities will be available to all citizens regardless of previous achievement or experience. Unlike community colleges in some other states which have restricted their offerings to technical education, the area schools in Iowa should also emphasize the vocational level for a) persons who have not had or who have not taken advantage of opportunities in high school, b) high school dropouts, and c) the many adults who may now need retraining.

To make the best use of available funds, certain highly specialized and costly curricula should be offered at a limited number of institutions. The high cost of instruction in small courses in certain curricula, the high initial cost of equipment, and the need for continually replacing obsolete equipment in some complex technical areas does not make it wise or efficient to offer certain programs at more than a few community colleges.

At the undergraduate level especially, the community colleges must develop a wide range of course offerings to serve the similarly wide range of student abilities and interests found in these "open-door" institutions. Undergraduate education should emphasize general education and preparation for specialization at the junior-senior level. Narrowly conceived and relatively expensive professional courses should be offered only in four-year colleges wherever organization of the program permits placing such courses at the junior-senior level. This curricula organization is described in more detail in the section on public four-year institutions.

To meet the needs of the state, particularly in those areas not served by four-year institutions, community colleges must become part of a statewide system of extension and public services. Although the community colleges should emphasize those services related to their own educational programs, they will be called upon to provide facilities and other resources for additional programs as well.

2. The Private Two- and Four-Year Institutions

Iowa has a long and rich tradition in private higher education. As a viable alternative to public education, private higher education enhances the status of both systems by insuring that students, faculty, and interested citizens will always have educational alternatives available to them.

One of the significant features of Iowa higher education is a basic partnership between private and public education. According to one of the most recent surveys (Hungate, 1964, p. 48), Iowa in 1960 ranked among the top eleven states in the percentage of degree enrollments in private institutions.[12] One of the major recommendations for the future development of Iowa's post high school education is that Iowans give far more support to their private colleges and universities, so that these institutions may be maintained as a vital force in Iowa post high school education.

The private colleges have emphasized the four-year liberal arts tradition and, as such, have provided a distinctive sector of the higher education pattern in Iowa. As relatively single-purpose institutions, the liberal arts colleges have been able to marshal institutional resources in pursuit of their aims to a degree not possible or desirable in the multi-purpose state institutions.

The term "single-purpose institution" serves only to distinguish liberal arts colleges from their multi-purpose sister institutions. The classification liberal arts college, covers an astounding diversity of institutions, characterized not so much by differences of purpose as by differences in ways of achieving those purposes. This diversity should be a continuing part of the state higher education picture.

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[12] Thad L. Hungate, Management in Higher Education, Teachers College Press, Columbia University, 1964.

As in other states, the magnitude of Iowa's post high school educational needs have become such that they can be met only through increased expenditures of public funds. These funds will be allocated primarily to public institutions, where the major enrollment increases will occur. Generally, Iowa private colleges have responded to the expansion of public education by more sharply defining their role as liberal arts colleges and, in large measure, are choosing to do a few things and to do them well.

a. Vocational-Technical Programs. The private four-year colleges offer very few vocational-technical programs at the present time. With perhaps two or three exceptions, those schools which offer programs in areas such as secretarial science, nursing, and religious education indicate they will eliminate these less than baccalaureate programs in the next few years. The exceptions are located generally in larger metropolitan areas where such programs can be offered to a sizable number of part-time and commuting students.

b. Undergraduate Programs. That the great majority of Iowa private colleges plan to continue to emphasize their unity of purpose as four-year liberal arts colleges in the years to come is clear in the institutional statements of future plans. Most schools which offer courses in business administration, home economics, and engineering plan to de-emphasize or eliminate these areas in the next few years.

There is a much smaller group of colleges not following the path of the more traditional liberal arts programs described above. This group, numbering no more than half a dozen schools, plans to diversify programs and functions and offer a number of curricula in professional and applied fields in addition to the traditional liberal arts and teacher education. The schools most likely to succeed in diversifying their offerings are those located where they will have access to commuting and part-time students and where the development of extensive public higher education facilities is unlikely.

Although many Iowa private colleges are beginning to rely quite heavily on out-of-state students to increase their enrollments, they will continue to serve large numbers of Iowa youth. Iowa private colleges have provided the state a great service in performing a regional educational function. The community college or some equivalent comprehensive public institution is now a necessity; but the continued partnership with private institutions is recognized as Iowa continues to rely on private colleges for the regional distribution of advanced undergraduate programs and allied functions, rather than initiating new four-year institutions.

A basic function for many Iowa private colleges is educational service to church constituencies. Rising costs, however, are forcing church bodies to examine the mission of the church college, and it is possible their resource may be available to a smaller number of institutions in the future.[13] The various denominations and other sponsoring groups should make a careful appraisal of their commitment to private higher education in Iowa over the next several years.

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[13] The Danforth Commission Preliminary Report on Church Colleges and Universities (Pattilo and Mackenzie, Eight Hundred Colleges Face the Future, 1965) contains specific reference to some church-related colleges in Iowa and the availability of denominational resources to maintain and enhance quality.

c. Graduate and Advanced Professional Education. At present, graduate and advanced professional education in Iowa private institutions is concentrated almost entirely at Drake University. Although one or two other private institutions are now offering summer session graduate programs, only Drake offers an academic year program at the master's and specialist level, as well as programs in pharmacy and law.

According to present plans, Drake will continue to emphasize a small graduate and advanced professional education program. This program will be extended eventually to include doctorates in several areas where Drake already has strong programs. Although it is recognized that Drake will have to strengthen its resources substantially to extend programs to the doctorate, its decision to seek these resources is welcomed.

In addition to Drake, about a dozen of the private liberal arts colleges showed interest, and about half of these institutions expressed actual intent, to initiate master's programs by 1970 or 1980. Most of the programs would be in teacher education, but a few would be in other professional areas and in selected areas of the liberal arts. Master's degree programs of acceptable quality cost more than undergraduate programs and cannot be self-supporting. The financial data indicate that several of the colleges proposing master's degree programs will have difficulty allocating a sufficient part of existing resources to new programs. While it would be presumptious to suggest the decision private institutions should make on offering post-baccalaureate programs, it does not seem amiss to urge caution in the initiation of graduate work.

3. Public Four-Year Institutions

The viability of the entire post high school program rests to a large extent on the quality of the advanced education and research for which the Regents institutions, along with Drake, have major responsibility in Iowa.

a. Vocational-Technical Programs. The Regents institutions should offer vocational-technical-level programs only in areas where the resources of the community colleges are inadequate to provide the services and where the Regents schools possess the unique resources, both physical and human, that make possible the development of such a program.

The public four-year institutions seem willing generally to de-emphasize and, in fact, to eliminate, vocational-technical programs which can be maintained adequately by community colleges. If there are programs at Regents institutions which unnecessarily duplicate those in community colleges, they should be eliminated by stages as community colleges are developed.

In the area of continuing education, the public four-year institutions must become even more deeply involved in less than baccalaureate degree level offerings. Specialized short courses, conferences, and institutes should be made increasingly available to the people of the state at all educational levels. Specialists from four-year institutions, drawing heavily on the latest research and scholarly activity, often are available only on their home campus, but their knowledge needs to be disseminated more widely than is possible through strictly on-campus continuing education activities. This can often be done cooperatively with the faculty of community colleges and other post high school institutions.

b. Undergraduate Programs. The main task of the public four-year institution at the undergraduate level will be to continue to provide quality undergraduate education for significantly increased numbers of Iowa youth, and to provide new and expanded programs where the need arises.

Recognizing, however, that sizable numbers of Iowa youth will choose to begin their education at a community college, the public four-year institutions, together with the two-year colleges, must now consider ways in which their efforts can be coordinated into a more effective and efficient public education system.

For public post high school education, a system emphasizing lower-division general education and pre-professional courses, with specialization essentially at the junior and senior level, is suggested. Some Iowa community colleges will be smaller than required to offer a full range of specialized courses. To provide maximum articulation with community colleges, and to make the best use of the state's resources, the Regents institutions should place specialized and professional courses at the junior and senior level wherever possible.

In program planning, the Regents institutions should work with the community colleges to maximize transfer of programs rather than the transfer of specific courses. With three Regents institutions having different general education requirements and different prerequisites for similar majors, the community colleges in Iowa are faced with a difficult task. Community colleges should be free to develop their own two-year programs in close consultation with the four-year institutions, and four-year institutions should be willing to accept qualified individuals, even if the patterns of courses are somewhat different from those of their own freshmen and sophomores.

c. Graduate and Advanced Professional Education. The Regents institutions at the graduate and advanced professional level have before them four central tasks:

1) Maintenance of Present Programs. Iowa graduate education must consistently improve if it is to remain a significant part of the nation's educational pattern. Recent ratings of Iowa graduate programs show that although most programs are at least adequate in quality, there is much to be done to attain the level of excellence to which the state should aspire.

   The tendency of the Iowa legislature to pare substantially the requests for improvement of on-going programs forces institutions into making requests based primarily on numbers of students. In the long run this approach serves no one, least of all the state itself. At the same time, the institutions should continue to live within their guidelines and not try to add new and expensive programs without extensive study and planning.

2) Expansion of Master's and other Continuing Education Programs. Iowa wisely has concentrated graduate and advanced professional instruction in a small number of institutions. There has been a nationwide tendency, however, to which Iowa is no exception, to concentrate on higher-level graduate programs which bring increased status to the institutions. In states, such as Iowa, where new graduate institutions have not emerged to offer occupationally oriented master's programs, the result has sometimes been a gap in graduate education. This interpretation is not suggested as a major criticism of the Regents institutions, since with limited funds they have been forced to choose those areas that would provide the greatest educational return for the investment. Nonetheless, the Regents schools ought not to devote increased emphasis to programs to meet the needs of the people of Iowa at the master's degree and post-baccalaureate continuing educational levels. It is recommended that the public four-year institutions significantly expand their offerings and emphases in these areas and, in addition, that they take steps to distribute the opportunity for graduate education across the state by providing significant numbers of graduate courses in off-campus locations. Although off-campus instruction is not as conducive to quality education as on-campus work, particularly at the graduate level, it is a far more educationally effective and economically efficient method of meeting the demand of Iowa citizens for applied and professional master's programs than the alternative of spreading Iowa's resources across a system of new regional state colleges. For this reason the Regents institutions are urged to distribute geographically the opportunities for graduate education through an increased emphasis on off-campus graduate instruction always with safeguards to assure education of good quality.

3) Development of Programs Which Will Fill Gaps in the Present Institutions. The policy of the development of more than one comprehensive university in the state is sound, but careful cooperation in the development of specialized programs should be maintained, and the present policy which seeks to avoid unwise duplication of costly graduate programs should be continued.

Institutions cannot mount post-baccalaureate programs in applied or specialized professional fields without concurrent offerings in the basic disciplines. For this reason all graduate institutions must become comprehensive, especially at the lower levels of instruction. The arguments over unnecessary duplication of functions as applied to programs in the basic disciplines at the baccalaureate level, and to a lesser extent at the master's degree level, are fallacious as applied to modern and complex institutional needs. Undergraduate and some graduate programs in basic disciplines are needed at all schools, and the Regents schools are reasoning soundly in their requests for additional and strengthened programs in the liberal arts.

At the Ph.D. level Iowa must be a part of a regional and national educational pattern. Not all highly specialized fields should be developed in every institution, nor should every department be of the same strength as every other department. At the Ph.D. level especially, Iowa must continue to choose its areas of emphasis wisely. Even in states as rich as California this decision has been made, and with Iowa's more limited resources there must be a reasoned selection of areas of excellence at the Ph.D. level.

4) The Development of New Areas of Graduate Specialization. To predict just which developments on the frontiers of knowledge will result in new fields of specialization is almost impossible. For this reason the Iowa graduate institutions must continually appraise the need for new graduate programs and seek the resources to develop new areas of significant concern. Iowa has made a basic commitment to excellence in graduate education, and to honor this commitment it must be prepared to expand and extend graduate offerings as knowledge itself expands and extends. This cannot be done if limited institutional funds prohibit exploration and tentative beginnings in new graduate fields.

d. The State College Function. Although an analysis of Iowa's present educational pattern and future needs does not suggest the need for a system of regional state colleges, there are a number of tasks to be performed which might appropriately be labeled as the "state college function." The possible demand for a greater diversity of curricula for more occupations at both the baccalaureate and post-baccalaureate levels, the definite need for increased enrollments in master's degree and other advanced continuing education programs, and the need for a substantial increase in the regional distribution of extension and other public services suggests that the "state college function" is not being carried out as it should in Iowa.

To perform the functions listed above, state colleges in other states have actually become small- to medium-sized universities. While the other Regents institutions will continue to play a major role in these areas, it does not seem amiss to urge that State College of Iowa's request for university status be implemented by the 1967 legislature. As such an institution, SCI could continue to emphasize growth in its present program and the introduction of new curricula, especially at the master's degree level. While not moving to doctoral programs in the next few years, it would continue to broaden its base in the liberal arts, and add appropriate curricula at the post-baccalaureate level.

Major Recommendations

The major tasks of Iowa post high school education in the next few years should be to:

1. Maintain and advance the quality of present programs and expand these programs to serve significantly greater numbers of Iowa citizens.
2. Devote significantly increased attention to:
    a. Expansion of vocational-technical education.
    b. Increased opportunities for adult and continuing education at all levels with particular emphasis upon:
        1) Opportunities for occupational retraining at the vocational-technical level.
        2) Increased opportunities for master's degrees, especially in applied and professional fields.
    c. A substantial increase in the state's commitment to excellence at the advanced graduate doctoral level.
    d. The advancement of research and other scholarly activities as a function of selected Iowa institutions.
    e. Increased extension and other public services.
    f. A more equitable, geographic distribution of those educational programs which serve the greatest numbers of Iowa citizens.
    g. Continued improvement in the utilization of the resources entrusted to Iowa's colleges and universities, including the need for systematic and coordinated educational planning.

To perform these major tasks in the most effective manner, Iowa's pattern of post high school education should emphasize the following features:

1. A system of comprehensive community colleges - to secure much-needed expansion and geographic distribution of vocational-technical education, opportunities for baccalaureate education at the freshman and sophomore level, and adult and continuing education in appropriate areas.

2. Continued centralization of upper-level undergraduate, graduate, and advanced professional programs and allied functions in existing public four-year institutions - to maintain and advance the quality of present programs, to assure the substantial increase in excellence at the advanced graduate level, and to advance the state's commitment to research and other scholarly activities.

3. A greater diversity of educational opportunities to be offered within existing public four-year institutions at the baccalaureate and post-baccalaureate levels - to bring about the increased emphasis upon applied and professional master's degree programs, other forms of continuing education, and the development of new programs where needed.

4. A well-coordinated system of extension and other public services - to secure the expansion of these services and their equitable geographic distribution.

5. The maintenance and advancement of present private colleges as a viable alternative to public education for significant numbers of Iowa youth - to secure the geographical distribution of advanced undergraduate and certain graduate and professional programs and to insure the maintenance of a diversity of opportunities which characterize a quality pattern of post high school education.

CHAPTER VII

FACULTY AND STAFF

Critical to all of Iowa's institutions of post high school education is the need for a quality faculty. While new innovations and methods of instruction should be constantly examined and developed, it is reasonable to suggest that nothing will be able to replace the well-trained, qualified instructor as the key to good instruction.

Expanding enrollments and the extension of post high school educational services to more of the citizens of Iowa will necessitate an increase in the number of faculty and staff required to carry on the educational functions of Iowa institutions.

Although some would contend that there will be an abundance of trained personnel for higher education in the near future,[1] a need for more faculty exists in Iowa now. Even if the numbers of needed faculty could be obtained, Iowa institutions must still be in a position to draw the best-qualified personnel available.

Recognizing that each post high school institution in Iowa enjoys the services of some dedicated, well-trained, and qualified staff members does not diminish the fact that data collected for this Study indicate that considerable attention must be given to recruiting and retraining more and better-qualified faculty members.[2]

Faculty and Staff Needs for the Future

It is estimated that during the academic year 1964-65, Iowa's institutions of post high school education had 3,975 full-time faculty members; that is, those whose work was more than half-time in instruction and research (Table I).

The use of a straight-line projection based on the enrollment projections in Chapter V reveals that 7,790 additional faculty members will be needed by 1980 to keep pace with the increase in student population. In addition, new faculty also must be procured to replace faculty members who resign, retire, or for other reasons leave the institutions. Allowing for an 11 per cent turnover per year, a figure slightly under the national average, 10,280 new faculty members over the fifteen-year period will be needed for replacement of faculty. By 1980 then, 14,070 new faculty will be needed in Iowa's institutions of post high school education.

In 1980, the projected full-time faculty in all institutions -- two-year and four-year -- will be 96 per cent greater than the 1964-65 total.

These projections are subject to considerable modification, depending upon the similarity of reality and assumption. First, of course, is a possible error in the enrollment projections. Significant changes in the total projected enrollment, or changes in the mix of students among the community colleges, private colleges, Regents Institutions, and among less than baccalaureate, post-baccalaureate, and graduate programs, would alter the projections of faculty needed.

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[1] Allan M. Cartter, "A New Look at the Supply of College Teachers," Educational Record, Summer, 1965.

[2] For a more extensive coverage of staffing post high school institutions, the reader is directed to the report of Committee D, Faculty and Staff, Iowa Cooperative Study of Post High School Education, The University of Iowa, Iowa City, Iowa.

TABLE I

PROJECTION OF FULL-TIME FACULTY NEEDED IN IOWA INSTITUTIONS 1970, 1975, 1980 BASED ON ENROLLMENT PROJECTIONS

			New Faculty Needed Each 5 Years		
	Projected Enroll-ment[a]	Projected Total Full-Time Faculty	For Enroll-ment Increase	For Turnover Replace-ment[b]	Total
State Universities					
1965	36,770	2,110			
1970	50,900	2,900	800	1,450	2,250
1975	59,500	3,400	500	1,750	2,250
1980	68,000	3,900	500	2,050	1,550
Private Four-Year Colleges					
1965	35,823	1,439[c]			
1970	47,200	1,900	450	950	1,400
1975	54,900	2,200	300	1,150	1,450
1980	61,100	2,500	250	1,300	1,550
Public Two-Year Colleges[d]					
1965	10,738	314[e]			
1970	21,300	620	300	300	600
1975	34,000	1,000	400	450	850
1980	42,200	1,230	250	650	900
Private Two-Year Colleges					
1965	2,794	112[e]			
1970	3,400	140	20	70	90
1975	3,600	150	10	80	90
1980	3,900	160	10	80	90
Totals All Institutions					
1965		3,975			
1970	122,800	5,560	1,570	2,770	4,340
1975	152,000	6,750	1,210	3,430	4,640
1980	175,200	7,790	1,010	4,080	5,090
TOTALS 1965-1980		20,100	3,790	10,280	14,070

[a] Enrollment projections from Chapter V.

[b] Turnover figured at 11 per cent per annum.

[c] Excluding two small non-reporting institutions. Some faculty totals taken from the A. A. U. P. reports (1965) or from a count of faculty listed in catalogue.

[d] Includes vocational-technical enrollments.

[e] Includes estimate for one non-reporting institution.

The faculty projections also are based only on full-time faculty and do not take into consideration part-time faculty, research faculty, or faculty on leave. Nor do the projections include estimates of the number of faculty needed for the expansion of programs as recommended by the Programs and Functions Committee or for the expected large number of part-time students to be served.

Obviously, too, any significant changes in the student/faculty ratio (held at their present levels in these projections), the efficiency of curriculum and instruction, and the instructor's credit hour and teaching load will alter the above projections.

Non-academic staff (clerical, skilled, and professional), though vital and essential in post high school institutions, almost defy projection and are not included. Obviously more will be needed, but how many more is open to too much conjecture. A liberal projection would suggest that a total of 14-15,000 will be employed by 1980, or about twice as many as were found in Iowa institutions of post high school education in 1965.

In spite of the apparent limitations of the projections, they do serve the purpose of estimating how many full-time faculty members will be needed to teach in Iowa's colleges.

Perhaps more important than the projection of faculty needs for all institutions *in* Iowa are the projections of faculty by types of institutions. This information is also found in Table I.

Faculty Needed in Two-Year Institutions

Two-year colleges in Iowa--public and private--now account for 10 per cent of the full-time faculty in all institutions. By 1980 it is projected that they will account for about 18 per cent of the total full-time faculty. This represents a projected 226 per cent increase in the full-time faculty of two-year colleges by 1980.

Accentuating the increase in faculty needed for the two-year college is the increased enrollment projected for these institutions as the statewide area community concept gives new opportunities of post high school education to a greater portion of Iowa's population. Public two-year colleges account for 88 per cent of the projected 1980 two-year college facilities, and 16 per cent of all post high school faculties in 1980.

Again the limitations of straight-line projections are present, and in this instance they are compounded by the fact that there is no historical precedent upon which to build a projection for the vocational-technical faculties. Faculties in the community colleges now predominantly represent instructors in college parallel programs, and one can only expect, as a minimum, the same ratio of students to faculty in the terminal vocational, occupational, and technical programs. If a greater number of faculty are needed to handle the vocational programs, the projections are understated.

In reality, the number of faculty needed in public community colleges will undoubtedly increase more rapidly than projected. In fact, approval standards for the new area community colleges set a 12-credit-hour teaching load for academic faculty and a 30-hour teaching week for vocational-technical faculty, increasing by one-third, the faculty projected on the basis of a 16-credit-hour teaching load for faculty in both areas.

Faculty Needed in Four-Year Institutions

The public and private four-year institutions, while not confronted with the dramatic percentage increase needed by the two-year institutions, face a larger numerical problem in finding new full-time faculty for enrollment increases and faculty replacement.

Public Four-Year

At present, the full-time faculty at the Regents institutions account for 53 per cent of all the faculty in post high school institutions. Although this per cent is expected decline slightly to 51 per cent of the total by 1980, the total full-time faculty is projected to increase from 2,110 to 3,900 by 1980. During the fifteen-year period 1965-1980, the Regents institutions will have to find 7,050 new faculty, or an average of better than 470 new full-time faculty members per year.

A major factor influencing the faculty projections at the Regents institutions is the extent to which their enrollments reflect graduate students. The student/faculty ratio at the graduate level is of necessity lower than the undergraduate student/faculty ratio, and, as graduate students increase as a proportion of the total enrollment, the increase in faculty will have to rise more rapidly than is projected.

Private Four-Year

Accounting for the decline in the share of the total faculty at the private four-year institutions is their expressed prerogative to limit enrollments. Nevertheless, private four-year colleges are projected to increase substantially and will find it necessary to increase their faculties about 70 per cent. As additional private colleges move into graduate programs, the number of full-time faculty needed will have to increase to compensate for the lower student/faculty ratio of graduate programs.

The figures concerning the number of new faculty needed appear somewhat alarming, and additional concern is forthcoming as the qualifications that must be required of those new faculty are considered.

Faculty Qualifications

Instruction is notoriously difficult to judge, and the quality of teaching and the teacher cannot be easily assessed without complicated and rigorous testing and evaluation of those being taught--and even this research has basic and serious limitations. However, despite the obvious exceptions, academic preparation and experience are the most important criteria in judging the expertise of the faculty. This is not to imply that a Ph.D. or its equivalent will necessarily make one a better teacher, but there is reason to believe that the requirements for the doctorate provide additional knowledge, skills, and background that should improve several of the basic elements of instruction; namely, knowledge from which to teach, and the ability to improve that knowledge with the methodology of research. Certainly there are good teachers who have only Master's or bachelor's training -- or equivalent experience -- but there is no evidence that a doctorate won't better prepare them to teach.

Even though there is a legitimate criticism of present Ph.D. programs which do not provide for the acquisition of known principles of teaching, learning, and classroom methodology, it is not likely that the solution to better undergraduate and graduate instruction will come by introducing new degrees to replace the Ph.D. (e.g., Master of Philosophy, Doctor of Arts), particularly when the new degrees merely eliminate the dissertation or a major research project, and do not include in their programs requirements for the attainment of pedagogical principles. It seems more desirable, in view of the respect for the Ph.D. and the less-than-enthusiastic reception of substitute degrees, to revise the present Ph.D. requirements to provide a "college teaching core" for those interested in college teaching. This core would include basic information on aspects of higher education, educational psychology, and instructional methodology.

In any event, the doctorate will remain an indication of training that is desirable for faculty in most areas of traditional college instruction.

The doctorate is, of course, required preparation for those teaching at the graduate level. The specialized and research-oriented work of the graduate school requires a faculty that is expert, in every sense of the word, and themselves productive scholars. As it is at this level that future college teachers will be prepared, competent and highly qualified professors must be sought and retained as faculty.

Undergraduate instruction also demands faculty with the training of the doctorate. Although this is particularly true in upper-division courses, most of which are highly specialized and often open to graduate students, it is also true in lower-division courses where the fundamental concepts and principles of knowledge must be set forth. Again the goal is for quality instruction and highly qualified instructors. Certainly the training and rigors of doctoral training can be used as one criterion of meeting this goal.

It is likewise necessary that instructors in the college parallel programs or transfer programs of the community colleges be equally as well trained and qualified -- more so, perhaps, because of the greater diversity in the ability of the two-year college student. If the two-year college student is to achieve as well as native students in four-year college programs, it is mandatory that his preparation be of a high quality. Hence, the college parallel programs in the community colleges must be staffed with qualified and capable instructors equal to those in four-year institutions, and the academic faculty of the community colleges must include a number with the doctorate or its equivalent.

Those responsible for instruction in the vocational, occupational, and technical courses of the terminal programs of the community colleges also must be well trained and qualified in their specialties. Clearly the doctorate, or any degree, is not necessarily a requirement in these areas, as experience in the field is more than an adequate substitute. It is imperative, however, that as instructors in these areas are added to faculties of educational institutions, they be given sufficient understanding of educational and institutional goals so they might combine a teaching knowledge with their technical competence.

Qualifications for faculty in professional schools and colleges are more apparent and need little comment. It is assumed, of course, that in addition to basic and advanced preparation in his speciality--be it law, medicine, dentistry, or nursing -- the faculty member also will be a skillful teacher.

In all cases the goal in creating faculties for the institutions of post high school education in Iowa should be quality. In seeking the men and women to teach in Iowa's institutions, all efforts must be made to find those with the best possible preparation and qualifications for the positions to be filled. Anything less is hardly in keeping with our commitment to provide the best possible education for Iowa's students.

Qualifications of Current Faculty

The quality of Iowa college faculties, as measured by the number holding advanced degrees, is not good (Tables II and III).

National averages, 1962-63, compiled by the United States Office of Education, indicate that 50.6 per cent of all four-year college teaching faculties possessed the doctorate, while two years later, 1964-65 only 43 per cent of faculty members of Iowa four-year colleges had the doctorate.

The same United States Office of Education report shows the national average of doctorates in public universities to be 58.4 per cent in 1962-1963, while the Regents institutions claimed only 46.6 per cent in 1964-65. The average percentage of doctorates on private college faculties was 42.7 per cent nationally in 1962-63, and only 37.1 per cent in Iowa two years later.

Owing to the wide range in the percentages of doctorates on Iowa private college faculties, more than half, fourteen of the twenty-three reporting private colleges, had percentages lower than the state average of 37.1 per cent. The range was from an excellent 70 per cent to a mere 10 per cent, with a median of only 33 per cent (Table III).

Two-year institutions had practically no doctorate holders on their faculties in 1964 (1.6 per cent), which is even more severe when it is recognized that few of the two-year institutions provided substantial programs in areas other than college parallel work -- a phenomenon which undoubtedly explains in part the high percentage of master's degrees (82.2 per cent) held by junior college faculty. Unfortunately, the data collected on the training of faculty did not show how much work beyond the master's degree was associated with the master's degrees held. It is likely that a majority of the master's degree holders have additional work toward a doctorate.

Obviously, a concerted effort must be made to upgrade the faculty of Iowa's post high school institutions. In terms of the number of doctorate holders on a faculty, the national averages should serve as the bare minimums, with realistic goals for Iowa colleges to fall within ranges of 65-75 per cent for the Regents institutions, 50-60 per cent for private colleges, and 8-12 per cent for community colleges.

TABLE II

HIGHEST EARNED ACADEMIC DEGREE HELD BY FULL-TIME FACULTY OF RANK OF INSTRUCTOR OR ABOVE -- 1954, 1959, and 1964

	Ph.D. or Equivalent		Masters' Degree and 1st Professional		Bachelor's Degree		Less Than Bachelor's	
1954-1955	No.	%	No.	%	No.	%	No.	%
Two-Year Private (N = 2) Colleges	1	2.4	30	73.2	10	24.4	-	-
Community Colleges (N = 9)	-	-	73	74.5	25	25.5	-	-
Private Colleges (N = 17)	238	34.8	384	56.1	60	8.8	5	0.7
State Universities (N = 1 for 1954, 2 for 1959 3 for 1964)	119	43.0	147	53.1	9	3.2	2	0.17
1959-1960								
Two-Year Private Colleges (N =	2	4.1	34	69.4	13	26.5	-	-
Community Colleges (N = 9)	-	-	105	85.4	16	13.0	2	1.6
Private Colleges (N = 17)	309	34.1	476	52.8	94	10.4	4	0.4
State Universities (N = 1 for 1954 2 for 1959 3 for 1964)	675	55.3	520	42.6	113	9.3	10	0.8
1964-1965								
Two-Year Private Colleges (N = 2)	-	-	55	89.3	6	10.7	-	-
Community Colleges (N = 9)	3	1.6	157	82.2	23	12.0	8	4.2
Private Colleges (N = 17)	535	37.1	802	55.7	63	5.9	1	0.1
State Universities (N = 1 for 1954 2 for 1959 3 for 1964)	1462	46.6	1307	41.7	461	14.7	10	0.3

Source: "A Preliminary Report of Committee D: Faculty and Staff," Iowa Cooperative Study of Post High School Education, The University of Iowa, Iowa City, Iowa, 1966.

TABLE III

PERCENTAGES OF FULL-TIME FACULTY IN IOWA FOUR-YEAR INSTITUTIONS HOLDING DOCTORATE, MASTERS, AND LESS THAN MASTERS DEGREES

1964-1965

		Percentage of total full-time faculty with	
Institution	Doctorate	Master's or First Professional	Less Than Master's
Private Colleges			
30	48	46	6
31	17	65	17
32	25	72	1
33	41	56	3
34	42	58	-
35	39	61	-
36	70	26	4
38	43	54	3
40	17	63	20
41	33	60	7
42	24	74	2
43	10	87	3
44	48	42	10
45	30	54	16
46	18	65	17
47	15	59	26
48	25	61	14
49	23	66	10
50	54	43	3
51	35	63	2
52	44	49	7
53	27	69	4
54	36	64	-
Medians	33	61	4
State Universities			
The University of Iowa	48	38	14
Iowa State Univ. (1965-1966)	43	32	25
State College of Iowa	47	42	15

Source: "A Preliminary Report of Committee D: Faculty and Staff," Iowa Cooperative Study of Post High School Education, The University of Iowa, Iowa City, Iowa, 1966.

Sources of New Faculty

Recognizing the monumental task involved in recruiting the number of qualified faculty, it is necessary to consider for a moment where the faculty will come from.

Using as a base data collected on the source of new faculty during 1963-64, 1964-65, it appears that most of the new faculty in Iowa colleges are of midwestern origin. Seventy per cent of the new faculty held bachelor's degrees from institutions in the Midwest, while 65 per cent held master's or doctorates from midwestern institutions.

Iowa, although a leading supplier of college teachers to Illinois and other states, provides relatively few Iowa faculty, with only 16 per cent of the new faculty holding doctorates from Iowa, 20 per cent master's and 26 per cent bachelor's degrees. Considering the number of post high school institutions in Iowa, it would seem both logical and expedient that a higher percentage of Iowa-trained faculty be sought, or retained, in Iowa to teach.

Examination of the sources of recent doctorates in Iowa institutions indicates that a large number come from institutions not having much experience in the doctoral area. This might suggest that Iowa institutions are not finding it possible to recruit from the older, more prestigious graduate schools.

Iowa's two-year institutions draw more heavily from the Midwest and Iowa than do the four-year institutions and perhaps will continue to do so as their programs expand. Hence, it is vitally necessary that the graduate schools of Iowa recognize the impending demand for instructors in the new community colleges and establish programs for training faculty members to staff these institutions. Certainly many of the new faculty engaged by the community colleges are qualified to teach college-level work, but almost half (46.6 per cent) of the new two-year faculties came from public secondary school positions. There are enough differences between high school and post high school education to suggest that more instructors specifically prepared for community college teaching must be trained and used in Iowa's two-year colleges.

Graduate schools were the predominant source of faculty for the public and private four-year institutions, with 44 per cent of the new private college faculty and 40.3 per cent of the new faculty in public colleges being appointed from graduate work, while about 22 per cent of the new faculty in four-year colleges came from other four-year colleges and universities. There was no evidence of Iowa colleges "raiding" other Iowa colleges for staff.

The implication in the large number of new faculty from the graduate schools and the rather low per cent from other colleges and universities, despite the fact that some of those coming from graduate schools may be experienced college teachers, is that a young, inexperienced group of new college teachers is being recruited by Iowa institutions. This fact may lead to the undesirable result of faculties lacking senior members with long teaching experience.

Perhaps the source pattern is a result of competition for faculties, a problem which must be reckoned with if the number and quality of faculty that is needed is to be acquired.

Recruiting and Retaining Faculty

The ability to attract a quality faculty in the numbers needed to staff Iowa's institutions of post high school education is dependent on several crucial factors.

First, although somewhat subjective, is the "appeal" of the Iowa institutions. To a questionnaire item asking for institutional advantages helping to attract new faculty members, most of the institutions cited characteristics of the college. Although this is encouraging, one cannot expect that Iowa institutions are so unique in their characteristics or their predominantly rural setting to draw all of the faculty they need.

It is interesting to note that in some institutions, notably the state institutions, salaries and fringe benefits proved to be an attraction for faculty. This must be considered as a matter of relativity, for as they attracted new faculty with a salary inducement, other colleges were luring their faculty with the same inducement. Data indicate that other colleges can and do offer better salaries than Iowa institutions. In fact, salaries ranked highest as a problem in recruiting in all Iowa institutions.

The lack of research opportunities appeared to be a recruiting problem for private four-year colleges and the two-year colleges, and might reflect the need for a teaching rather than research-oriented doctorate. Teaching load was found to be an additional hindrance in the recruiting of faculty for the two-year colleges.

Also listed by the private four-year colleges and two-year colleges as a problem in recruiting was the lack of qualified personnel. Although it was not clear what was meant by this, it might mean a scarcity of those trained in an area -- an absolute shortage -- or it might mean an inability to compete for those who are qualified -- a relative shortage. In either event, data collected for this study show that 114 actual vacancies existed (1964-1965) in all Iowa institutions and that 162 positions were filled with people with lesser qualifications than desired -- a clear indication that competing for quality faculty members is a problem that must be realistically faced by Iowa institutions.

Recruiting is really nothing more than competing with other institutions for the available, qualified, faculty member. How well one recruits is largely dependent upon how well one competes. When considering the major inducements upon which recruiting might focus, Iowa institutions do not appear to be in a favorable competitive position. In fact, analysis of salaries, fringe benefits, conditions of service, and other work conditions suggests that Iowa is fortunate to have the quality of faculty in its institutions that it does have.

Salaries and Fringe Benefits

From the data collected by the Faculty and Staff Committee, it is quite apparent that Iowa post high school institutions are not in a very favorable competitive salary position.

Two sets of national averages available for comparison -- one figured by the American Association of University Professors and the second by the United States Office of Education -- give the average salary of all faculty as $10,012 and $9,000, respectively. As the 824 institutions reporting to the A.A.U.P. tend to be the larger and more affluent institutions, the U.S.O.E. average is more likely to represent the actual average and is the average salary figure used for comparison herein.

All three of the Regents institutions exceeded or were near (one within $150) the $9,000 U.S.O.E. national average salary. However, only two of the twenty reporting private four-year colleges exceeded the average, and less than half exceeded or were within 10 per cent of the national average.

Examination of salary by rank is even more revealing. None of the private colleges reported average salaries for professors or associate professors that exceeded the national averages ($12,500 and $9,000, respectively) for these ranks, and only five institutions paid at least 90 per cent of the national averages. The range of averages was from $11,900 to $7,483 in Iowa. At the lower ranks, five institutions exceeded the national averages for assistant professors and instructors, six more were within 90 per cent of the national average, and all reporting four-year colleges paid an average instructor's salary that was within 80 per cent of the national average.

It is in the higher ranks where faculty are more subject to offers of better salaries elsewhere; this is reflected in the inability to hold or hire senior faculty, and the necessity of hiring young faculty from graduate schools.

The data also revealed that the spread of salary between ranks is less than conducive to retaining faculty. In the private colleges the maximum spread between the average professor's salary and the average instructor's salary is $4,725 -- the minimum is only $1,557 -- hardly incentive for the young faculty member to work his way up through the ranks. It is not unreasonable to expect at least a doubling of salary as one goes from instructor to full professor.

Private four-year colleges are not in a good competitive position in terms of salary and must act to bring average salaries at all ranks more closely in line with the national averages, and to provide the incentive -- by increasing the salary spread between junior and senior faculty levels -- to retain senior faculty of competence in Iowa institutions.

Two-year colleges are also in a weak position in terms of competitive salaries, both nationally, with other two-year colleges, and with four-year institutions. Only two of the two-year colleges reporting were above the national average ($8,095) or within 10 per cent of it, and only one of the two-year colleges reported an average salary within 10 per cent of the national four-year average ($9,000).

Although there are many reasons for lower averages in the two-year colleges than the four-year colleges, it must be re-emphasized that the quality of the faculty giving the college parallel work in the two-year college must equal or exceed the quality of four-year college faculty teaching similar courses. As the two-year colleges will be competing with four-year colleges for faculty in college parallel programs, they must be equally competitive to attract that faculty. It must also be recognized that the new two-year community colleges will have to compete with business and industry for teachers in the vocational-technical and occupational areas. Industrial salaries are considerably higher than academic salaries and will force the two-year colleges to raise salary schedules to compensate for this.

There is a real concern that the two-year colleges in Iowa in no way be thought of as inferior to any other institutions of post high school education. This means hiring a competent, qualified faculty and will require competitive salaries with industry, business, and four-year colleges.

If the post high school institutions in Iowa are to recruit and retain qualified faculty members, they must pay salaries that will attract and remain attractive to faculty in competition with other institutions and organizations. For Iowa institutions this means catching up, keeping up, and pushing ahead of the competition.

Consideration in faculty competition must also be given to the usually non-monetary rewards accruing to the faculty member in terms of fringe benefits (additional benefits to the employee which are an additional cost to the employer). Although retirement programs are the major fringe benefits, others, including insurance, housing, tuition exemption or education for children, processional travel expenses, activity privileges, clerical assistance, sabbaticals and leaves of absence, are offered to faculty at Iowa colleges. The Faculty and Staff Committee recommended 15 per cent of annual salary as a reasonable contribution to retirement, with 10 per cent paid by the institution and 5 per cent contributed by the faculty member.

As national trends indicate an increase in fringe benefits for faculty service, Iowa institutions must plan to meet competition in this area as well.

Conditions of Service

In addition to monetary and quasi-monetary benefits influencing the recruitment and retention of qualified faculty members, there are certain elements of the faculty appointment which also must be considered "competitive" by their appearance or absence in the institution.

One of these is tenure, which, after a period of probation, assures the continued appointment of the faculty member. Designed to assure academic freedom, tenure simply provides the faculty member the security of not being dismissed without proven, adequate cause. The A.A.U.P. has been instrumental in developing outlines for basic tenure policies and has championed the cause of tenure policies in collegiate institutions. The endorsement of these guidelines by the Association of American Colleges and the American Association of Colleges for Teacher Education suggests their importance and acceptance by the academic community. Most of the four-year institutions have tenure policies which are compatible with the A.A.U.P. statement; those who do not are encouraged to develop them.

Most community colleges, reflecting their previous secondary school affiliations, have relied upon the Iowa "tenure" law for public school teachers. This tenure law is far from adequate, does not conform to the A.A.U.P. statement, and does not guarantee any secure continuing tenure. Other two-year colleges give no indication of any tenure policies.

Tenure provisions are an important consideration in recruiting faculty members and must be developed by the two-year institutions, as well as the four-year colleges, as guarantees of fundamental faculty rights.

Another basic element in recruiting is the matter of promotion and rank. Again, most of the four-year colleges have written policies regarding promotion, and those who do not are urged to develop them. Although salary and rank are usually closely related, rank should not be the only determinant of salary and provision should be made for salary increases without increases in rank. Both rank and salary promotions should be based on merit, and all institutions, particularly the four-year institutions, are urged to recognize that teaching as well as research and publication must be rewarded. In fact, in most Iowa institutions good teaching should be rewarded by rank and salary first.

Academic rank for two-year college teachers is a matter of national debate. Although there are good arguments pro and con to ranking two-year college faculty, the difficulty of finding a base from which to build a policy for ranking both the vocational-technical, occupational faculty, and the college transfer faculty suggests a more careful study of the problem for Iowa community colleges.

Also important in faculty recruitment, and it might be suggested in faculty effectiveness, is the factor of teaching load. Teaching loads, most commonly measured in terms of the numbers of hours per week spent in teaching, are difficult to analyze statistically because they are compounded by such things as the size of the classes, student contact hours, number of different preparations required, advising, committee work, and administrative assignments.

Using only the number of hours of teaching as a reference, most four-year colleges had normal teaching loads of twelve hours, with the range from eight to sixteen. Junior colleges had significantly higher teaching loads, ranging from twelve to seventeen hours, with a normal load of fifteen hours. However, the new approval standards for the area community colleges will set twelve hours as the standard teaching load in academic areas.

Still, the faculty teaching load represents only a portion of the time the faculty member must spend preparing for class, correcting and reading papers, meeting and advising students, participating in faculty meetings and other academic affairs, and the further developing his professional competence by reading and research. In view of these other demands on faculty time, and in light of a nationwide trend toward a nine-hour teaching load, a twelve-hour teaching load or its equivalent must be considered a maximum in academic areas.

Vocational-technical instruction loads will be set by standard at six hours per day, thirty hours per week, which appears reasonable in light of available information.

The aforementioned are but a few of the factors aiding in the recruitment and retention of faculty members. Each institution must be prepared to meet the demands of competition, and be ready, willing and able to do all that is necessary in attracting and keeping a quality faculty.

Faculty Upgrading and the Improvement of Instruction

Perhaps as important as the recruitment of a good faculty is the opportunity for faculty members to improve and continue to upgrade their competencies.

It is considered as fundamental that each institution permit and encourage, by financial arrangements, faculty membership in appropriate professional organizations. Active participation in professional organizations can benefit the institution as well as the faculty member by personal contacts and the exchange of ideas.

Similarly, it is essential that each Iowa post high school institution provide leaves of absence and sabbaticals for professional improvement off campus, and reduced teaching loads for research and professional improvement on campus.

Although it almost goes without saying that proper teaching requires equipment and facilities, faculty offices suitable for study, research, consultation and counseling, adequate libraries, and clerical and technical assistance in non-teaching chores, more attention needs to be given to these as a means of aiding the faculty in their work.

In addition to the basics, several projects which might be considered by Iowa post high school institutions as part of a cooperative program for the upgrading of faculty and the improvement of instruction include increased tuition grants for Iowa college faculty members to complete their degrees -- in Iowa graduate schools or in other graduate schools; joint appointments by institutions to make use of distinguished professors and artists; and, a "laboratory" college to experiment with new teaching and instructional techniques, new courses and curricula, and to provide for the training of new college teachers.

Recommendations

The following recommendations are based on the belief that quality in the faculties of Iowa's post high school institutions is the first and prime consideration in staffing. Good instruction is the key to good education, and every effort must be made to keep the instructor, instruction, and education of the finest quality possible.

I. In an effort to help meet the need for additional faculty and staff, it is recommended that:
    A. Capable undergraduate students be encouraged to enter college teaching by (a) granting scholarships for graduate study, (b) providing tuition grants for graduate students entering college teaching, (c) providing loans for future college teachers.

  B. Women and members of minority groups, when qualified, be used more extensively to meet the existing and future needs for faculty members.

II. In recognition of national trends regarding the qualifications of faculty, recruitment policies should be established so that 65-75 per cent of the faculty in the Regents institutions, 50-60 per cent of the faculty in the private four-year colleges, and 8-12 per cent of the faculty of the area community colleges hold the doctorate or its equivalent.

III. As an aid to recruiting and retaining quality faculty it is recommended that:

  A. Salaries and fringe benefits in all institutions and at all ranks equal or exceed the national averages for similar and competing institutions with a 100 per cent spread in the highest and lowest salaries as a minimum salary differentiation.

  B. Suitable policies related to tenure, promotion, and faculty participation in academic policy-making be developed and initiated in those colleges not now having such provisions.

  C. Teaching loads in academic programs be twelve hours as a maximum without an excessive increase in the student credit hours taught, or student contact hours; in vocational-technical programs instructional loads be six hours per day, thirty hours per week, while maintaining reasonable student contact hours.

IV. As an effort to upgrade the faculties and improve instruction, it is recommended that:

  A. Each institution provide for leaves of absence and sabbaticals, with pay, for professional development and advancement off-campus, and reduced loads for research and on-campus personal professional development.

  B. Increased grants and fellowships be made available to faculty in Iowa colleges to complete advanced degrees.

  C. College teaching programs should be started, continued, and expanded in Iowa's graduate schools, including a specialist degree and suitable master's degree for those preparing for two-year college work in technical, vocational, and occupational education.

Obviously, these recommendations will take time and money to implement; unfortunately, alternatives costing less will provide less.

CHAPTER VIII

ANALYSIS OF EXISTING PHYSICAL FACILITIES

In this chapter data are included on the land, physical plant, and utilization of existing instructional facilities of public and private two-year and four-year institutions in the state for the 1965-66 school year.

The Role of The Higher Education Facilities Commission

This report was conducted in cooperation with the Higher Education Facilities Commission of the State of Iowa. This commission provided financial support to the Study because it was interested in state-wide planning.

The data-gathering instrument was a comprehensive questionnaire. Information was gathered on the following: 1) the area and uses of land owned or leased by an institution, 2) the sources of funds used in the last five years to acquire land and buildings and to construct buildings, 3) the capacity, physical condition, location, and ownership of each campus building, 4) and the function, size, and capacity of each room. Information was gathered for each room in which scheduled classes are conducted either for credit or non-credit. Information was also gathered on areas such as faculty offices and research laboratories. Each institution was asked about its construction plans through 1970. These were requested chiefly for use in administering the facilities grants program of the Higher Education Facilities Commission and are not summarized for this report.

In the initial stages, most of the campuses were visited in order to ensure uniform reporting. Wherever reported information was incomplete or unclear, an institutional official was again consulted.

The forty-eight institutions in Iowa which are fully accredited by the North Central Association of Colleges and Secondary Schools and all Public community colleges certified by the State Department of Public Instruction participated in the survey. These include three public four-year institutions (Board of Regents), twenty-five private four-year institutions, sixteen public two-year colleges and four private two-year colleges.

Physical Facilities at Two-Year Institutions

Land Assigned and Unassigned

Of the 310 acres of main campus land reported by the twenty two-year institutions of higher education, presented in Table I, 165 acres, or 53 per cent was assigned to building and such non-building use as parking lots and playing fields. The remaining 145 acres, or 47 per cent was unassigned. The sixteen public community colleges, which together accounted for a total of 131 acres, reported 48 acres used for buildings, 70 acres for non-building use, and 13 acres, or 91 per cent, as unassigned. The four private two-year colleges reported 7 acres used for buildings, 39 acres for non-building use and 132 acres, or 73.9 per cent, unassigned.

TABLE I

DISTRIBUTION OF LAND AT TWO-YEAR INSTITUTIONS BY ASSIGNED USE

Institutional Group	Number of Institutions	Assigned Use						Unassigned		Total	
		Building		Non-Building		Total					
		Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Public Community Colleges	16	48	86.8	70	63.9	118	71.6	13	9.1	131	42.3
%		40.8		59.3		90.1		10.9		100.0	
Private Colleges	4	7	13.2	39	36.1	47	28.4	132	90.9	179	57.7
%		15.6		84.4		26.1		73.9		100.0	
Total	20	55	100.0	109	100.0	165	100.0	145	100.0	310	100.0
%		33.6		66.4		53.0		47.0		100.0	

Land Expenditures

During the five-year period of 1960 to 1965, the 20 two-year institutions reported spending a total of $308,000 for land acquisition. (This is presented in Table II.) The public community colleges accounted for $119,000 of this total, and the private two-year colleges accounted for $189,000.

The public community colleges reported that $16,000, or 13.4 per cent, of their expenditures for land acquisition were received from federal and local government sources. Of the $103,000 balance, $58,000 was received from endowments, grants, and gifts and $45,000 came from current funds.

All of the funds used by the private two-year colleges for land acquisition came from non-government sources as follows: $120,000 from endowments, grants, and gifts; $40,000 from current funds; and $29,000 from other sources.

Physical Plant

Inventory of Physical Plant

The space associated with the regular operation of institutions of higher education is reported under the categories of instructional, research, residential, general-auxiliary, and unassignable. The unassignable portion includes corridors, stairwells, restrooms, and custodial rooms.

Gross Area

The twenty two-year institutions of higher education in Iowa reported a gross area of 1,678,189 square feet of building space, as indicated in Table III. Of this area, 54.7

TABLE II

EXPENDITURES FOR LAND ACQUISITION AT TWO-YEAR INSTITUTIONS 1960-1965
(Amounts in thousands)

	Public Community Colleges		Private Colleges		Total	
Source of Funds	Amount	%	Amount	%	Amount	%
Government						
Federal	$ 9	56.3	$ -	-	$ 9	56.3
%	100.0		-		100.0	
State	-	-	-	-	-	-
%	-		-		-	
Local	7	43.7	-	-	7	43.7
%	100.0				100.0	
Total	$ 16	13.4	$ -	-	$ 16	5.2
%	100.0		-		100.0	
Non-Government						
Revenue Bonds	$ -	-	$ -	-	$ -	-
%	-		-		-	
Endowments, Grants and Gifts	58	56.3	120	63.5	178	61.0
	32.6		67.4		100.0	
Current Funds	45	43.7	40	21.2	85	29.1
%	5.9		47.1		100.0	
Other	-	-	29	15.3	29	9.9
%	-		100.0			
Total	$103	86.6	$189	100.0	$292	
%	35.3		64.7			94.8
Grand Total	$119	100.0	$189	100.0	$308	100.0
%	38.6		61.4		100.0	

per cent was reported as assignable to specific purposes and the remaining 45.3 per cent was reported as unassignable.

Assignable Area

Of the total assignable area of 917,139 square feet (reported in Table IV), within the twenty two-year institutions of higher education, 148,977 square feet, or 16.2 per cent, was residential space, and 768,162, or 84.8 per cent, was non-residential space. The public community colleges reported 30,136 square feet, or 5.6 per cent, of their assignable area as residential and the balance of 505,224 square feet (94.4 per cent) as non-residential. The private two-year institutions reported 118,841 square feet, or 31.1 per cent, of their assignable area as residential and 262,938 (68.9 per cent) as non-residential.

TABLE III

DISTRIBUTION OF GROSS BUILDING AREA AT TWO-YEAR INSTITUTIONS
(Area in Square Feet)

Institutional Group	Gross Area		Assignable Area		Unassignable Area	
	Area	%	Area	%	Area	%
Public Community Colleges	1, 033, 712	61.6	535, 360	58.4	498, 352	65.5
%	100.0		5.18		48.2	
Private Colleges	644, 477	38.4	381, 779	41.6	262, 698	34.5
%	100.0		59.2		40.8	
Total	1, 678, 189	100.0	917, 139	100.0	761, 050	100.0
	100.0		54.7		45.3	

TABLE IV

DISTRIBUTION OF ASSIGNABLE AREA BETWEEN RESIDENTIAL AND NON-RESIDENTIAL SPACE AT TWO-YEAR INSTITUTIONS
(Area in Spare feet)

Institutional Group	Residential		Non-Residential		Total	
	Area	%	Area	%	Area	%
Public Community Colleges	30, 136	5.6	505, 224	94.4	535, 360	100.0
Private Colleges	118, 841	31.1	262, 938	68.9	381, 779	100.0
Total	148, 977	16.2	768, 162	84.8	917, 139	100.0

Assignable Area by Function

Of the total assignable space (excluding residential) reported by the public community colleges, 81.1 per cent was assigned to instruction, 0.2 per cent to research, and 18.7 per cent to general-auxiliary. The private two-year colleges reported 50.6 per cent assigned to instruction, 3.5 per cent to research, and 45.9 per cent for general-auxiliary uses. The combined amount assignable for instruction at all two-year institutions was 70.7 per cent, with 1.3 per cent assigned to research, and 28.0 per cent assigned to general auxiliary.

Of the total 768, 162 square feet reported as non-residential by the twenty two-year institutions, 542, 980 square feet (70.7 per cent) was for instruction, 10, 155, or 1.3 per cent, was for research, and the balance of 215, 027 square feet (28.0 per cent) was for general-auxiliary use.

The public community colleges account for 505,224 square feet, or 65.8 per cent, of the total non-residential assigned space. Of this amount, 409,849 square feet was assigned to instruction, 94,492 square feet to general-auxiliary, and 883 square feet to research.

The private two-year colleges accounted for 262,938 square feet, or 34.2 per cent, of the total non-residential assigned space. This space was assigned as follows: 133,131 square feet for instructional purposes, 9,272 square feet for research, and 120,535 square feet for general-auxiliary purposes.

TABLE V

ASSIGNABLE AREA AT TWO-YEAR INSTITUTIONS BY FUNCTION
(Area in square feet)

	Total		Instructional		Research		General-Auxiliary	
Institutional Group	Area	%	Area	%	Area	%	Area	%
Public Community Colleges	505,224	65.8	409,849	75.5	883	8.7	94,492	43.9
%	100.0		81.1		0.2		18.7	
Private Colleges	262,938	34.2	133,131	24.5	9,272	91.3	120,535	56.1
%	100.0		50.6		3.5		45.9	
Total	768,162	100.0	542,980	100.0	10,155	100.0	215,027	100.0
%	100.0		70.7		1.3		28.0	

Obsolete and Rehabilitation Space

The public community colleges reported 25,226 square feet, or 2.4 per cent, of their gross space as obsolete and 89,970 square feet (8.7 per cent) of their gross space in need of rehabilitation. The private two-year institutions reported 47,066 square feet, or 7.3 per cent, of their gross space as obsolete and 62,276 square feet, or 9.7 per cent, of their gross space in need of rehabilitation.

For all twenty two-year institutions, 4.3 per cent of the gross space was reported as obsolete and 9.1 per cent in need of rehabilitation. In other words, 13.4 per cent of the gross space at the two-year institutions was reported to be in unsatisfactory condition. (See Table VI.)

Investment in Buildings, 1960 - 1965

During the five-year period from 1960 to 1965 the two-year institutions spent a total of $6,516,000 on buildings. The public community colleges account for 45.3 per cent and the private colleges 54.7 per cent of this total. (See Table VII.)

The public community colleges reported that $1,820,000, or 61.7 per cent, of their expenditures by the public community colleges for building purposes came from the following sources: $844,000 from endowments, grants, and gifts and $286,000 from other sources.

TABLE VI

SPACE THAT IS OBSOLETE AND SPACE IN NEED OF REHABILITATION AT TWO-YEAR INSTITUTIONS
(Area in square feet)

Institutional Group	Obsolete Area	Obsolete %	Needs Rehabilitation Area	Needs Rehabilitation %	Gross Space Area
Public Community Colleges	25,226	34.9	89,970	59.1	1,033,712
%	2.4		8.7		-
Private Colleges	47,066	65.1	62,276	40.9	644,477
%	7.3		9.7		-
Total	72,292	100.0	152,246	100.0	1,678,189
%	4.3		9.1		-

TABLE VII

EXPENDITURES FOR BUILDING CONSTRUCTION AT TWO-YEAR INSTITUTIONS, 1960-1965
(Amounts in Thousands)

Source of Funds	Public Community Colleges Amount	Public Community Colleges %	Private Colleges Amount	Private Colleges %	All Institutions Amount	All Institutions %
Government						
Federal	$ 328	18.0	$ -	-	$ 328	15.5
%	100.0				100.0	
State	-	-	-	-	-	-
%	-	-	-	-	-	-
Local	1,492	82.0	300	100.0	1,792	84.5
%	83.3		16.7		100.0	
Total	$1,820	61.7	$ 300	8.4	$2,120	32.5
%	85.5		14.2		100.0	
Non-Government						
Revenue Bonds	$ -	-	$ 850	26.1	$ 850	19.4
%	-	-	100.0		100.0	
Endowments, Grants and Gifts	844	74.7	497	15.3	1,341	30.6
%	62.9		37.1		100.0	
Other	286	25.3	190	5.8	476	10.8
%	60.0		40.0		100.0	
Total	$1,130	-	$3,256	-	$4,386	67.5
%	25.9	38.3	74.1		100.0	
Grand Total	$2,950	-	$3,566	-	$6,516	
%	45.3	100.0	54.7		100.0	

The private two-year colleges reported that $300,000, or 16.7 per cent, of their expenditures came from government sources, entirely on the level of local government. The balance of their expenditures, amounting to $3,256,000, came from the following sources: $850,000 from revenue bonds; $497,000 from endowments, grants, and gifts; $1,719,000 from current funds; and $190,000 from other sources.

Utilization of Instructional and Instruction-related Facilities

An inventory of the physical plant at two-year institutions in Iowa is presented in Table V. The data indicate the area in square feet assigned for specifically defined academic purposes. This section of the survey reports the utilization made of these facilities.

As stressed earlier, the purpose of these tables is to present data useful for describing utilization. In no way should the facts be interpreted as suggesting adequate or inadequate utilization of facilities. The data are quantitative only and do not reflect the quality of instructional space, its specialized use, or its vital relationships with non-instructional space needs on a particular campus.

Distribution of Student Clock Hours

The twenty two-year institutions of higher learning reported a total of 167,867 clock hours during which students are in a scheduled classroom or laboratory situation. (See Tables VIII, IX, X.) The public community colleges accounted for 84.7 per cent of the total hours and the private two-year institutions accounted for the remaining 15.3 per cent. Of the total student clock hours, 99 per cent was reported in instructional space and 1 per cent was reported in non-instructional space. The per cent of student clock hours assigned to instructional space for each of the two groups of institutions is 99.1 per cent for the public community colleges and 98.3 per cent for the private two-year institutions.

TABLE VIII

DISTRIBUTION OF STUDENT CLOCK HOURS BETWEEN INSTRUCTIONAL AND NON-INSTRUCTIONAL SPACE AT TWO-YEAR INSTITUTIONS

	Student Clock Hours					
	Instructional Space		Non-Instructional Space		Total	
Institutional Group	Amount	%	Amount	%	Amount	%
Public Community Colleges	140,933	99.1	1,280	0.9	142,213	84.7
Private Colleges	25,218	98.3	436	1.7	25,654	15.3
Total	166,151	99.0	1,716	1.0	167,867	100.0

Of the 167,867 student clock hours, 96.1 per cent was reported as being taught between the hours of 7 a.m. and 5 p.m., 3.6 per cent between 5 p.m. and 10 p.m., and the remaining 0.3 per cent on Saturday. However, at the private two-year institutions a larger percentage of the student clock hours is taught after 5 p.m. and on Saturdays than at the public community colleges. For the private two-year institutions, 10.1 per cent of the hours was taught after 5 p.m. and 1.5 per cent on Saturdays, while for the public community colleges, 2.4 per cent was taught after 5 p.m. and 1 per cent on Saturday.

TABLE IX

DISTRIBUTION OF STUDENT CLOCK HOURS BY TIME OF SCHEDULED COURSES AT TWO-YEAR INSTITUTIONS

Institutional Group	7 A.M. - 5 P.M. Clock Hours	5 P.M. - 10 P.M. Clock Hours	Saturday Clock Hours	Total
Public Community Colleges	138,658	3,413	142	142,213
%	97.5	2.4	0.1	100.0
Private Colleges	22,678	2,591	385	25,654
%	88.4	10.1	1.5	100.0
Total	161,336	6,004	527	167,867
%	96.1	3.6	0.3	100.0

The 167,867 student clock hours for all two-year institutions are accounted for as follows: classrooms, 67.1 per cent; instructional laboratories, 28.2 per cent; physical education, 2.9 per cent; other instruction, 0.8 per cent; and general auxiliary, 1 per cent.

TABLE X

DISTRIBUTION OF STUDENT CLOCK HOURS BY TYPE OF SPACE AT TWO-YEAR INSTITUTIONS

Institutional Group	Classrooms Clock Hours	Instructional Laboratories Clock Hours	Physical Education Clock Hours	Other Instruction Clock Hours	Research Clock Hours	General Auxiliary Clock Hours	Total
Public Community Colleges	92,154	45,650	2,418	711		1,280	142,213
%	64.8	32.1	1.7	0.5		0.9	100.0
Private Colleges	20,395	1,770	2,360	639	26	410	25,654
%	79.5	6.9	9.2	2.7	0.1	1.6	100.0
Total	112,549	47,420	4,778	1,404	26	1,690	167,867
%	67.1	28.2	2.9	.8	0.1	1.0	100.0

Space Utilization Factors

The space utilization factor used in this survey is defined as the square feet of space per student clock hour. (See Table XI.) The higher the factor, the lower the utilization, since a higher figure indicates a greater number of square feet available per student clock hour. Taking all instructional space into consideration, this factor is 10.22 for the private two-year institutions and 3.43 for the public community colleges. The lower factor for the public community colleges indicates that much of the space used is, no doubt, high school space.

The space utilization factor applied only to the community colleges was 1.53 for classrooms and 3.62 for instructional laboratories. For the private two-year institutions, the space utilization factor for classrooms was 2.31, and for instructional laboratories 9.30. When considering classrooms, instructional laboratories, and libraries together, the space utilization factor for the community colleges is 2.26 and for the private two-year institutions, 3.66.

TABLE XI

SPACE UTILIZATION FACTORS AT TWO-YEAR INSTITUTIONS

Use	Public Community Colleges	Private Colleges
Classrooms	1.53	2.31
Instructional Laboratories	3.62	9.30
Classrooms, Instructional Laboratories and Libraries	2.56	3.66
All Space	3.43	10.22

The U.S. Office of Education, Bureau of Higher Education, has adopted, as a required criterion in its facilities grants programs, a space utilization factor covering instructional and library areas. It is called the capacity/enrollment ratio and is a quantitative measure indicating the number of square feet of instructional and library area per 100 student clock hours.

The ratio for the public community colleges participating in this Study was 225.5, and the ratio for Iowa's private two-year institutions was 365.7. A lower ratio, according to this measure, indicates a higher utilization.

Data from the six public community college applicants in Iowa which received federal grants for the construction of physical facilities through the Higher Education Facilities Commission during the fiscal year 1965 indicated a capacity/enrollment ratio of 140.4. From applications submitted by sixty-one public community colleges and public technical institutes throughout the nation for the fiscal year 1965, the U.S. Office of Education reported a median of 192.

Physical Facilities at Four-Year Institutions

Land Assigned and Unassigned

For the twenty-eight public and private four-year institutions of higher education in Iowa, the Facilities Survey identified the total land area associated with main campus operations in the fall of 1965. Within this total the land area was distributed between that portion assigned for buildings or other purposes and that portion which had no specifically assigned use. Planned changes in the assignment of land as reported for the fall of 1965 are also indicated. In addition to data relative to current and anticipated land use, information was obtained concerning the investment that the institutions had made in land during the five-year period 1960-1965.

Land Assigned to Specific Use

Of the 3,893 acres of main campus land reported at four-year institutions (Table XII), 3,357 acres, or 86.3 per cent, of the total was assigned for either building or such non-building uses as parking lots, playing fields, farms, and open spaces. Within this assigned land total, 2,858 acres, or 85.1 per cent, was assigned for non-building uses, with the remaining 14.9 per cent, or 499 acres, being used for building sites.

Iowa's three public institutions of higher education accounted for 63.9 per cent of the total land area assigned. This represented 2,147 acres of land distributed between building and non-building uses. The area used for buildings was 248 acres (11.6 per cent of the total); the remaining 1,899 acres, or 88.4 per cent, was used for non-building purposes.

Iowa's twenty-five private four-year institutions reported a total of 1,210 acres assigned to a definite purpose. Of this total, 251 acres, or 20.8 per cent, was used for building sites and the remaining 959 acres (79.2 per cent) was used for non-building purposes.

Unassigned Land

For all four-year institutions in the state, both public and private, a total of 536 acres of land was reported as unassigned. (See Table XII.) This unassigned land consisted of 295 acres for the Regents institutions, or 55 per cent of the total, and 241 acres for the private four-year institutions.

The total of 536 acres reported as unassigned represented 13.7 per cent of the total land area. At the Regents institutions, 12.1 per cent of their total acreage was unassigned. At the private four-year institutions, 16.6 per cent of their total acreage was unassigned.

Change in Existing Use of Land

Of the 3,893 acres of main campus land at Iowa's four-year institutions, 144 acres, or 3.7 per cent, was reported as planned for purposes other than that for which it is currently being used. (See Table XIII.) The Regents institutions reported plans to change the use of 124 acres (5.1 per cent) of their total land area. The private institutions indicated plans to change the use of twenty acres (1.4 per cent) of their main campus area.

Land Expenditures, 1960 - 1965

During the five-year period 1960-1965, Iowa's four-year institutions reported expenditures of $3,180,000 for land acquisition.(See Table XIV.) Of this total, $1,552,000, or 48.8 per cent, was spent by the Regents institutions and $1,628,000, or 51.2 per cent, was spent by the twenty-five private institutions.

The funds expended for land acquisition were identified as coming from government or non-government sources. Of the $3,180,000 expended for land acquisition, $189,000 (5.9 per cent of the total) was received from direct government sources. The remaining

TABLE XII

DISTRIBUTION OF LAND AT FOUR-YEAR INSTITUTIONS BY ASSIGNED USE

Institutional Group	Number of Institutions	Assigned Use						Unassigned		Total	
		Building		Non-Building		Total					
		Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Regents	3	248	49.7	1,899	66.4	2,147	63.9	295	55.0	2,442	62.7
%		11.6		88.4		87.9		12.1		100.0	
Private	25	251	50.3	959	33.6	1,210	36.1	241	45.0	1,451	37.3
%		20.8		79.2		83.4		16.6		100.0	
Total	28	499	100.0	2,858	100.0	3,357	100.0	536	100.0	3,893	100.0
%		14.9		85.1		86.3		13.7		100.0	

TABLE XIII

PLANNED CHANGE IN CURRENT LAND USE AT FOUR-YEAR INSTITUTIONS

Institutional Group	Total		Planned Change	
	Acres	%	Acres	%
Regents	2,442	62.7	124	86.0
%			5.1	
Private	1,451	37.3	20	14.0
%			1.4	
Total	3,893	100.0	144	100.0
%			3.7	

$2,991,000 was received from a variety of non-government sources such as revenue bonds, endowments, grants and gifts, and current funds.

Of the $1,552,000 spent by the Regents institutions for land acquisition, 12.2 per cent came from government sources and the remaining 87.8 per cent came from non-government sources. Of the $1,363,000 in non-government funds, 83.2 per cent came from "other" sources, 10.9 per cent from revenue bonds, and 5.9 per cent from endowments, grants, and gifts. Included in this major "other" category of fund sources were pledged building fees, current funds, and earnings from endowment funds.

All of the funds expended for land acquisition from 1960 to 1965 by the twenty-five private institutions came from non-government sources. Of the $1,628,000 reported expenditures, 84 per cent came from current funds, 13.5 per cent from endowments, grants, and gifts, 1.2 per cent from revenue bonds, and 1.2 per cent from other sources.

TABLE XIV

EXPENDITURES FOR LAND ACQUISITION AT FOUR-YEAR INSTITUTIONS, 1960-1965

(Amounts in thousands)

	Regents		Private		Total	
Source of Funds	Amount	%	Amount	%	Amount	%
Government						
Federal	$ -	-	$ -		$ -	-
%	-	-	-		-	-
State	189	100.0	-		189	100.0
%	100.0		-		100.0	
Local	-	-	-		-	-
%	-		-		-	
Total	$ 189	12.2	$ -		$ 189	5.9
%	100.0		-		100.0	
Non-Government						
Revenue Bonds	$ 149	10.9	$ 20	1.2	$ 169	5.7
%	88.2		11.8		100.0	
Endowments, Grants and Gifts	80	5.9	220	13.5	300	10.0
%	26.7		73.3		100.0	
Current Funds	-		1,368	84.0	1,368	45.7
%	-		100.0		100.0	
Other	1,134	83.2	20	1.2	1,154	38.6
%	98.3		1.7		100.0	
Total	$1,363	87.8	$1,628	100.0	$2,991	94.1
%	45.6		54.4		100.0	
Grand Total	$1,552	100.0	$1,628	100.0	$3,180	100.0
%	48.8		51.2		100.0	

Inventory of Physical Plant

This survey included a detailed inventory of all space associated with the regular operation of the state's four-year institutions of higher education. Space is reported in five categories: instructional, research, residential, general-auxiliary, and unassignable. The unassignable category indicated the difference between the gross area of the plant and that space which was assignable to the other four preceding categories. A substantial portion of the unassignable area was represented by corridors, stairwells, restrooms, and custodial rooms. The research facilities connected with federal projects and The University of Iowa Medical Hospital are excluded. A detailed list of the types of facilities in each of the categories used for classifying physical space is included in the survey instrument.

Gross Area

The twenty-eight four-year institutions of higher education in Iowa reported a total gross area of 20,645,819 square feet of space. Of this total, 14,475,648 square feet, or 70.1 per cent, was assignable area, while the remaining 6,170,171 square feet, or 29.9 per cent of the total was unassignable. (See Table XV.)

The Regents institutions accounted for 12,073,388 square feet of gross space (58.5 per cent of the total for all institutions). The private institutions accounted for the remaining 8,572,431 square feet of gross space, or 41.5 per cent of the total.

In the Regents institutions, 70 per cent is assignable to instructional, research, residential, or general-auxiliary functions, and 30 per cent was unassignable. An almost identical relationship existed at the private institutions, where 70.3 per cent of the gross area is assignable and 29.7 per cent unassignable.

TABLE XV

DISTRIBUTION OF GROSS BUILDING AREA AT FOUR-YEAR INSTITUTIONS
(Area in square feet)

Institutional	Gross Area		Assignable Area		Unassignable Area	
Group	Area	%	Area	%	Area	%
Regents	12,073,388	58.5	8,448,110	58.4	3,625,278	58.8
%	100.0		70.0		30.0	
Private	8,572,431	41.5	6,027,538	41.6	2,544,893	41.2
%	100.0		70.3		29.7	
Total	20,645,819	100.0	14,475,648	100.0	6,170,171	100.0
%	100.0		70.1		29.9	

Assignable Area

Of the 8,448,110 square feet of assignable space reported for the Regents institutions, 3,363,089 square feet, or 39.8 per cent, of the total assignable area represented residential space. The remaining 5,085,021 square feet of space, or 60.2 per cent, was assignable for instructional, research, and general-auxiliary purposes.

Of the 6,027,538 square feet of area at the private four-year institutions, 2,876,389 square feet (47.7 per cent of the total assignable area) was reported in use for residential purposes. The remaining 3,151,149 square feet was reported assignable to instructional, research, and general-auxiliary purposes. (See Table XVI.)

TABLE XVI

DISTRIBUTION OF ASSIGNABLE AREA BETWEEN RESIDENTIAL AND NON-RESIDENTIAL SPACE

(Area in square feet)

Institutional Group	Residential		Non-Residential		Total	
	Area	%	Area	%	Area	%
Regents	3,363,089	53.9	5,085,021	61.7	8,448,110	58.4
%	39.8		60.2		100.0	
Private	2,876,389	46.1	3,151,149	38.3	6,027,538	41.6
%	47.7		52.3		100.0	
Total	6,239,478	100.0	8,236,170	100.0	14,475,648	100.0
%	43.1		56.9		100.0	

In discussing assignable area among the various institutions of higher education, it is appropriate to consider separately that portion categorized as non-residential. This is indicated in Table XVII. Residential facilities which may reflect widely differing institutional policies and standards are not absolutely essential to every academic program and are generally expected to be self-supporting. Thus, in the following consideration of assignable area, the total figures include space assigned to instructional, research (non-governmental), and general-auxiliary functions, but exclude residential space. Examples of general-auxiliary uses are administrative and faculty offices, an auditorium, stadium, theater, union, book store, or printshop.

Of the total assignable space (excluding residential), 48.1 per cent was assigned for instructional purposes in classrooms and laboratories, 7.7 per cent was assigned for research activities, and 44.2 per cent for general-auxiliary purposes. Of the total assignable space (excluding residential) at the Regents institutions, 42.5 per cent was assigned to instructional use, 12.1 per cent for research (excluding government-sponsored research), and 45.4 per cent for general-auxiliary use. At the private four-year institutions, 57.3 per cent of the assignable space (excluding residential) was for instructional, 0.6 per cent for research, and 42.1 per cent for general-auxiliary purposes.

The relative space reported for the three functions varies widely from campus to campus, reflecting differences in curricular and other emphases. The total assignable area used for instruction, research, and general-auxiliary functions was distributed as follows: 61.7 per cent at the Regents institutions and 38.3 per cent at the private institutions. In the area of instruction, the Regents institutions provided 54.5 per cent of the total space, and the private institutions 45.5 per cent. The Regents institutions provided nearly all, or 96.8 per cent, of the total research space. The Regents institutions also accounted for 63.5 per cent of general-auxiliary space.

TABLE XVII

ASSIGNABLE AREA BY FUNCTION AT FOUR-YEAR INSTITUTIONS
(Area in square feet)

	Total		Instructional		Research		General-Auxiliary	
Institutional Group	Area	%	Area	%	Area	%	Area	%
Regents								
University of Iowa	2,505,163	49.3	1,031,813	47.8	295,861	47.9	1,177,489	50.9
%	100.0	-	41.2	-	11.8		47.0	-
Iowa State University	2,055,545	40.4	805,039	37.3	320,587	52.1	929,919	40.3
%	100.0	-	39.2	-	15.6	-	45.2	-
State College of Iowa	524,313	10.3	321,589	14.9	-	-	202,724	8.8
%	100.0	-	61.3	-	-	-	38.7	-
Total	5,035,021	61.7	2,158,441	54.5	616,448	96.8	2,310,132	63.5
%	100.0	-	42.5	-	12.1	-	45.4	-
Private	3,151,149	38.3	1,804,674	45.5	20,350	3.2	1,326,125	36.5
%	100.0	-	57.3	-	0.6	-	42.1	-
Total	8,236,170	100.0	3,963,115	100.0	636,798	100.0	3,636,257	100.0
%	100.0	-	48.1	-	7.7	-	44.2	-

Obsolete and Rehabilitation Space

At the Regents institutions, 923,522 square feet of space was described as in need of replacement due to obsolescence. (See Table XVIII.) This represented 7.6 per cent of the gross area of the Regents institutions. In addition, 1,549,968 square feet, or 12.8 per cent, of existing space at the Regents institutions was reported in need of rehabilitation.

At the private four-year institutions, 303,608 square feet of gross area was reported as obsolete and in need of replacement. This represented 3.5 per cent of the total gross area of these institutions. At the private four-year institutions, 830,509 square feet, or 9.7 per cent, of existing space was reported in need of rehabilitation.

TABLE XVIII

SPACE THAT IS OBSOLETE AND SPACE IN NEED OF REHABILITATION AT FOUR-YEAR INSTITUTIONS

(Area in square feet)

Institutional Group	Obsolete		Need of Rehabilitation		Gross Space
	Area	%	Area	%	
Regents	923,522	75.3	1,549,968	65.1	12,073,388
%	7.6		12.8		
Private	303,608	24.7	830,509	34.9	8,572,431
%	3.5		9.7		
Total	1,227,130	100.0	2,380,477	100.0	20,645,819

Investment in Buildings, 1960-1965

During the five-year period 1960 to 1965, Iowa's four-year institutions of higher education spent a total of $100,815,000 on buildings. (See Table XIX.) This total was almost equally divided between the Regents institutions and the private institutions, with 50.2 per cent at the former and 49.8 per cent at the latter.

The sources of building funds reflect the difference in support between the public and the private institutions. The Regents institutions received from government sources 60.5 per cent of the $50,657,000 spent for buildings. Of this amount, 89.1 per cent came from the state and 10.9 per cent from the federal government. The private institutions in the state received from government sources 1.2 per cent of the $50,158,000 expense for buildings.

Of the approximately $19,985,000 which the Regents institutions received from non-government sources, 76 per cent came from revenue bonds, 3.7 per cent from endowments, grants, and gifts, 6.6 per cent from current funds, and 13.7 per cent from other sources. By way of contrast, the $49,566,000 in non-governmental funds spent on buildings during the same period by the private institutions were derived from the following sources: revenue bonds, 41.1 per cent; endowments, grants, and gifts, 40.1 per cent; current funds, 7.8 per cent; and other sources, 11 per cent.

Utilization of Instructional and Instruction-Related Facilities

An inventory of the physical plant for higher education at four-year institutions in Iowa is presented in Table XX. The data indicates the area in square feet assigned for specifically defined academic purposes. This section of the survey reports the utilization made of these facilities.

The utilization of an instructional facility can be measured in a number of ways. One approach is to count the number of periods (hours) per week in which classrooms are used. Another alternative is to count the number of stations (seats) in the classrooms,

TABLE XIX

EXPENDITURES FOR BUILDINGS AT FOUR-YEAR INSTITUTIONS 1960-1965
(Amounts in thousands)

Source of Funds	Regents Amount	%	Private Amount	%	Total Amount	%
Government						
Federal	$ 3,346	10.9	$ 288	48.6	$ 3,634	11.6
%	92.1		7.9		100.0	
State	27,326	89.1	-	-	27,326	87.4
%	100.0		-	-	100.0	
Local	-	-	304	51.4	304	1.0
%	-		100.0		100.0	
Total	$30,672	60.5	$ 592	1.2	$ 31,264	31.0
%	98.1		1.9		100.0	
Non-Government						
Revenue Bonds	$15,196	76.0	$20,393	41.1	$ 35,589	51.2
%	42.7		57.3		100.0	
Endowments, Grants and Gifts	743	3.7	19,889	40.1	20,632	29.7
%	3.6		96.4		100.0	
Current Funds	1,314	6.6	3,835	7.8	5,149	7.4
%	25.5		74.5		100.0	
Other	2,732	13.7	5,449	11.0	8,181	11.7
%	33.4		66.6		100.0	
Total	$19,985	39.5	$49,566	98.8	$ 69,551	69.0
%	28.7		71.3		100.0	
Grand Total	$50,657	100.0	$50,158	100.0	$100,815	100.0
%	50.2		49.8		100.0	

laboratories, and libraries and determine the extent to which they are occupied. Still another alternative is to consider enrollment and curriculum. No one method is without controversy.

This study utilizes a widely acceptable method for considering utilization. It may be termed a space utilization factor as it represents the ratio of the square feet of instructional area to the total number of hours during which all students are in a classroom or laboratory situation. In other words, it is the number of square feet of instructional space per student clock hour.

In presenting this information on the utilization of space, it is stressed again that the purpose of so doing is to provide data which may be useful for assessing utilization. In no way should the facts be interpreted as suggesting adequate or inadequate utilization of facilities as measured against uniform standards. The data are quantitative only and do not reflect the quality of instructional space, its specialized use, or its vital relationships with non-instructional space needs on a particular campus.

Distribution of Student Clock Hours

The four-year institutions of higher education in Iowa accounted for more than one million clock hours of instruction per week. This information is presented in Tables XX, XXI, and XXII. Of this total, 91 per cent was conducted in regularly assigned instructional space, while 8.9 per cent was conducted in such non-instructional space as auditoriums, chapels, faculty offices, administrative area, or multi-purpose rooms.

TABLE XX

DISTRIBUTION OF STUDENT CLOCK HOURS BETWEEN INSTRUCTIONAL AND NON-INSTRUCTIONAL SPACE AT FOUR-YEAR INSTITUTIONS

Institutional Group	Instructional Space Clock hours	Non-Instructional Space Clock hours	Total
Regents	521,878	61,628	583,506
%	89.4	10.6	100.0
Iowa State University	223,556	46,692	270,248
%	82.7	17.2	100.0
State College of Iowa	80,685	12,785	93,470
%	86.3	13.7	100.0
University of Iowa	217,637	2,151	219,788
%	99.0	1.0	100.0
Four-Year Private	457,494	34,581	492,075
%	93.0	7.0	100.0
All Four-Year Institutions	979,372	96,209	1,075,581
%	91.0	8.9	100.0

Combined classroom, laboratory, physical education, and other instructional facilities for the Regents institutions accounted for 89.4 per cent of the student clock hours, while this combination for the private institutions accounted for 92.8 per cent. According to the type of space, the Regents institutions reported 63.6 per cent and 21.8 per cent of the total student clock hours in classrooms and instructional laboratories, respectively. The private institutions reported 73.3 per cent and 14.9 per cent, respectively, for these facilities.

Of the more than one million student clock hours taught by the four-year institutions, 95.7 per cent falls between the hours of 7:00 a.m. and 5:00 p.m. The remaining student clock hours were divided almost evenly between courses conducted between the hours of 5:00 p.m. and 10:00 p.m. on weekdays and courses taught on Saturdays.

TABLE XXI

DISTRIBUTION OF STUDENT CLOCK HOURS BY TYPE OF SPACE AT FOUR-YEAR INSTITUTIONS

Institutional Group	Classrooms Clock Hours	Instructional Laboratories Clock Hours	Physical Education Clock Hours	Other Instruction Clock Hours	Research Clock Hours	General Auxiliary Clock Hours	Library-Miscellaneous Clock Hours	Total
Regents	370,911	127,162	17,040	6,586	8,255	53,374	178	583,506
%	63.6	21.8	2.9	1.1	1.4	9.2	-	100.0
Iowa State University	128,680	78,772	9,541	6,550	8,255	38,437	13	270,248
%	47.6	29.2	3.5	2.4	3.1	14.2	-	100.0
State College of Iowa	60,551	13,319	6,779	36	-	12,785	-	93,470
%	64.8	14.2	7.3	-	-	13.7	--	100.0
University of Iowa	181,680	35,071	720	-	-	2,151	165	219,788
%	82.7	15.9	0.3	-	-	1.0	0.1	100.0
Private Colleges	360,700	73,509	11,877	10,727	1,082	33,499	681	492,075
%	73.3	14.9	2.4	2.2	0.3	6.8	0.1	100.0
Total	731,611	200,671	28,916	17,313	9,337	86,873	859	1,075,581
%	68.0	18.7	1.6	1.6	0.9	8.1	-	100.0

The four-year private institutions made slightly greater use of combined evening and Saturday time than did the Regents institutions. The private institutions conducted 95.1 per cent of their total student clock hours of instruction during the day, between 7:00 a.m. and 5:00 p.m., while the Regents institutions conducted 96.2 per cent of their student clock hours during the day. Iowa State University reported 4.6 per cent of its student clock hours on Saturday, The University of Iowa 2 per cent, and State College of Iowa 0.7 per cent. However, State College reported 3.2 per cent student clock hours from 5 p.m. to 10 p.m., compared with 1.1 per cent at The University of Iowa, and none were reported after 5 p.m. at Iowa State University.

Space Utilization Factors

The space utilization factor is defined as square feet of space per student clock hour. The higher the factor, the lower the utilization since a higher figure indicates a greater number of square feet available per student clock hour. Conversely, the lower the factor, the higher the degree of utilization. (See Tables XXIII and XXIV.)

For all non-residential assignable space at the Regents institutions, the space utilization factor was 8.71 square feet per student clock hour, indicating a lower utilization than at the private four-year institutions, where the space factor was 6.25 square feet per student clock hour. Contrasted with the private four-year institutions, the higher space utilization factor at the Regents institutions for all space reflects the existence of more extensive facilities in categories other than classrooms and instructional laboratories in relation to the number of student clock hours. For instructional laboratories, the Regents institutions and private four-year institutions show almost identical utilization,

TABLE XXII

DISTRIBUTION OF STUDENT CLOCK HOURS BY TIME OF SCHEDULED COURSES AT FOUR-YEAR INSTITUTIONS

Institutional Group	7 A.M.-5 P.M. Clock Hours	5 P.M.-10P.M. Clock Hours	Saturday Clock Hours	Total
Regents	561,310	5,356	16,840	583,506
%	96.2	0.9	2.9	100.0
Iowa State University	257,844	-	12,404	270,248
%	95.5		4.6	100.0
State College of Iowa	90,421	2,954	95	93,470
%	96.7	3.2	0.1	100.0
University of Iowa	213,045	2,402	4,341	219,788
%	96.9	1.1	2.0	100.0
Four-Year Private	468,172	16,977	6,925	492,074
%	95.1	3.5	1.4	100.0
All Four-Year Institutions	1,029,482	22,333	23,765	1,075,580
%	95.7	2.1	2.2	100.0

with space utilization factors of 5.54 and 5.51, respectively. For classrooms, the utilization was slightly higher at the Regents institutions, with a space utilization factor of 1.14 compared with a space utilization factor of 1.45 at the private institutions.

TABLE XXIII

SPACE UTILIZATION FACTORS AT FOUR-YEAR INSTITUTIONS

(Square feet per student clock hour)

Use	University of Iowa	Iowa State University	State College of Iowa	Total	Four-Year Private
Classroom	1.21	1.00	1.21	1.14	1.45
Instructional Laboratories*	9.38	3.74	6.06	5.54	5.51
All Space	11.40	7.60	5.60	8.71	6.25

* Includes research space, office space, etc.

The capacity adopted by the U.S. Office of Education, and referred to earlier in this chapter, is defined as the total number of student clock hours divided by 100, and this ratio is in turn divided into the square feet of campus area in classroom, laboratory, and library facilities. It is a quantiative ratio indicating the number of square feet per 100 student clock hours. The higher the ratio, according to this measure, the lower the degree of space utilization; conversely, the lower the ratio, the higher the utilization.

TABLE XXIV

CAPACITY/ENROLLMENT RATIO: CLASSROOMS, INSTRUCTIONAL LABORATORIES, AND LIBRARIES

Institutional Group	Capacity/Enrollment Ratio
Regents' Institutions Combined	1,449,770/4,980.87 or 291.1
Private Institutions	1,263,178/4,348.90 or 290.5
All Four-Year Institutions	2,712,948/9,329.77 or 290.8

Data from the ten applicants (including one private two-year college) which received federal grants for the construction of physical facilities through the Higher Education Facilities Commission during the fiscal year 1965 indicate a capacity/enrollment ratio of 303. From applications submitted by 353 institutions (public, private four-year, and private two-year) throughout the country, the U.S. Office of Education, Division of Construction Facilities, reported a capacity/enrollment ratio of 307. For applicants in this group from the midwest regional area headquartered in Kansas City and Chicago, the median capacity/enrollment ratio was 325. On a national and regional comparison, the Iowa colleges and universities appear to be utilizing space to a rather high degree.

Summary and Conclusions

Certain conclusions regarding the physical facilities of Iowa's post high school institutions can be drawn from an examination of the data reported in this study. Chief among these are the following, grouped by type of institution.

Two-Year Institutions

1. At present, there are great extremes in the kind, amount, and quality of facilities for community college programs. Most public two-year institutions in 1965-66 operated in conjunction with high school plants.
2. There are almost no residential facilities provided at existing public two-year institutions.
3. There is greater use of evening hours by two-year institutions than four-year institutions. The use of evening hours by private two-year institutions is greater than by public two-year institutions.
4. The two-year institutions reflect a high degree of utilization as measured by a space factor. The utilization in public two-year institutions is higher than in private two-year institutions. This is at least partially due to the sharing of high school plants by the public institutions.

5. There is a need for a continuing inventory of all space and its use at the state's two-year institutions.
6. A disproportionate amount of existing space at both types of institutions was reported to be obsolete and/or in need of rehabilitation. As a result, a substantial renovation and construction program (independent of that required to meet the needs of an increase in enrollment) will be necessary in the years ahead.

Four-Year Institutions

1. About 70 per cent of the gross building area in public and private institutions is assignable and usable. This current situation is in keeping with acceptable and realistic standards.
2. While non-residential space currently accounts for more than 50 per cent of the total assignable area, trends in requirements and policies relative to residential facilities suggest this space may account for a greater share of total assignable space in the future.
3. Currently the private institutions provide slightly more residential space (48 per cent) in relation to total assignable space than do the public institutions (40 per cent).
4. Assignable area devoted to a specific use varies between institutions and between types of institutions, reflecting differing curricula emphasis and physical plant characteristics.
5. There are identifiable differences in program emphasis between individual institutions as evidenced by the distribution of student clock hours between types of use (classroom, laboratory, research, etc.).
6. Relatively little use is made of facilities in the evening and on Saturday at the state's public and private four-year institutions.
7. Utilization of facilities as measured by a space factor is higher in the private institutions than in the public institutions. Both public and private institutions compare favorably on a national and regional basis in utilization with a higher use per square foot per student clock hour. This may infer a shortage of space.
8. As was true of the state's two-year institutions, the four-year institutions are currently using a disproportionate amount of space which is obsolete and in need of rehabilitation. As a result, a substantial renovation or construction program (independent of that needed to provide for an increase in enrollment) will be necessary in the years ahead.
9. There is a need for a continuing inventory of all space and its use at the state's private and public four-year institutions.

General Recommendations

1. It is recommended that greater use of Saturday and evening hours be considered by all state institutions.
2. It is recommended that better provision be made for the long-range planning of physical facility needs. Special attention in such planning should be given to providing for future plant depreciation.

CHAPTER IX

PROJECTIONS OF COSTS FOR CAPITAL IMPROVEMENTS

Long-range projections of necessity involve a number of assumptions, all or many of which may be partially or completely non-applicable after a lapse of a period of time. The key ingredients to the effective use of long-range planning are that they be soundly based at the time of their design and that they be continually reviewed and revised so that annual adjustments can be made. If this is done, any adverse impact of "wrong guesses" in terms of the total plan can be readily identified and accommodated.

Higher education, at the moment, in Iowa and throughout the country, is undergoing significant change. The volume and nature of post high school educational services being demanded is increasing substantially. In addition, and perhaps more significantly, the emphasis in the components of such service is shifting. Because of this state of adjustment, the task of anticipating future needs involves the consideration of many variables. In the following projections there are a number of assumptions. Certain of these assumptions remain constant throughout all of the projections, while others will differ between individual projections. This method is utilized to identify alternative planning targets that may be considered in arriving at what may be determined as the best planning objective at the present time.

The present instructional emphases of each institution in the state have been considered and are reflected in the basic data upon which the projections are made. However, there has been no attempt to anticipate possible changes in an individual institution's existing instructional environment. Depending on the extent and nature of environmental changes, these projections may need adjustment. A very significant observation in this regard was made at the 1956 California and Western States Cost and Statistical Study Conference:

> ". . . some institutions specialize in certain academic areas; other stress different disciplines or subdivisions of disciplines. One university for example, might develop over the years a physical science program emphasizing solid-state physics. The learning environment thus created would be very different from that of the average undergraduate department in general physics. The costs would also be different. Some institutions may be strongly oriented toward undergraduate instruction; others, toward graduate work. The educational philosophy at one university may lead to more laboratory instruction in a given subject field than at another university. In all these cases, different environments are represented, and different costs should be expected."[1]

It is important to remember that the total anticipated future physical facility needs as presented in the following projections tend to be a composite of the individual environments of the post high school institutions of the state at the present time. For this, and other reasons, it would be inappropriate and inaccurate to attempt to proportionately distribute the total projected needs among the individual institutions in the state and expect any meaningful result.

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[1] 1956 California and Western States Cost and Statistical Study Conference: University of California Printing Department, 1957, p. 80.

The chapter is divided into three parts. The first section presents a single projection of physical facility needs and costs for the public and private two-year institutions.

The second section presents a projection of physical facility needs and costs for the public and private four-year institutions. This projection makes use of space standards which have been developed and used extensively in projecting space needs in other states. These space standards were reviewed, and in some cases revised, by the Physical Facilities Committee for this Study and represent a consensus of the Committee.

The third section is a brief discussion of major conclusions and recommendations.

Two-Year Public and Private Institutions

Projected Financial Needs for Capital Improvements

Assumptions. As indicated previously, long-range planning of financial needs for capital improvements must, of necessity, be made on the basis of many assumptions. A number of assumptions were made regarding the determination of financial needs for capital improvements at the state's public and private two-year institutions. Chief among these were the following:

1. That the enrollment projections will prove to be reasonably accurate.
2. That 50 per cent of the existing space in public two-year institutions in 1965 is usable for future needs and that this space would accommodate approximately 50 per cent of the enrollment in 1965. The remaining space is considered to be unusable for one or more of the following major reasons:
    a. Space that is obsolete.
    b. Space that is in need of rehabilitation.
    c. Space that is part of an existing high school plant.
    d. Space that is located on a campus that is not at the geographic center of new area community college districts.
3. That 75 per cent of the existing space in private two-year institutions in 1965 is appropriate for future use and that this space would accommodate approximately 75 per cent of the enrollment in 1965. The remaining space is considered to be unusable for one or both of the following reasons:
    a. Space that is obsolete.
    b. Space that is in need of rehabilitation.
4. That construction costs for new academic and vocational-technical facilities are estimated to be approximately $3,500 per student in 1965 and that these costs will increase 3 per cent annually from 1965 to 1980.
5. That two-year institutions, and more particularly public institutions, will continue to be essentially commuter institutions.

Projected Capital Cost Estimates

The projected financial needs for capital improvements at public and private two-year institutions for the time periods 1965 through 1970, 1971 through 1975, and 1976 through 1980 are presented in Table I. If the above assumptions are valid, then the total

TABLE I

PROJECTED FINANCIAL NEEDS FOR CAPITAL IMPROVEMENTS (NON-RESIDENTIAL AT TWO-YEAR INSTITUTIONS: 1970, 1975 and 1980

(In thousands of dollars)

Institutions	1965-66 through 1970-71	1971-72 through 1975-76	1976-77 through 1980-81	TOTAL
Public Two-Year*	$76,612	$82,802	$78,220	$237,634
Private Two-Year	$12,934	$ 3,173	$ 4,051	$ 20,158
Total	$89,546	$85,975	$82,271	$257,792

*Excluding costs of leasing temporary facilities and future obsolescence.

total cumulative financial requirements for both public and private two-year institutions are projected to be the substantial amount of approximately 258 million dollars.

As is to be expected, the financial needs of public two-year institutions account for the great majority of this amount. (See Table IA.) If physical facilities are to be available to accommodate the increase in enrollment projected for these institutions, then an investment of approximately seventy-seven million dollars will be required by the 1970-71 academic year. Close to eighty-three million ($82,802,000) will be required for the time period 1971 through 1975, and a somewhat lower amount for the best five-year period of the projection.

The state's private two-year institutions will also require the expenditures of a considerable amount of monies for capital improvements. More than one-half of the projected twenty million dollars needed by 1980 will be required by the 1970-71 academic year. (Because of the small number of these colleges and because of the fact that enrollment estimates for these are the least reliable, for reasons noted in Chapters I and V, these projections are probably the least reliable.)

These costs do not include expenditures that will be required by public two-year institutions to lease space to house their programs until such time as the new facilities are constructed. The nature and extent of leasing programs needed and the amount of monies required are not known at this time nor are estimates available regarding individual plans of area community college districts to use "temporary" facilities. The costs also exclude future obsolescence of existing or new facilities.

Four-Year Institutions

The use of existing practices to project future physical facility needs of four-year institutions raises questions such as the adequacy of present utilization and the appropriateness of the use of existing plant design for programs that have substantially changed.

TABLE IA

COMPUTATION OF FINANCIAL NEEDS FOR CAPITAL IMPROVEMENTS (NON-RESIDENTIAL SPACE) AT TWO-YEAR INSTITUTIONS: 1970, 1975 and 1980

Period	Public	Private	Computation
1. 1965-66 through 1970-71			
a. Adjusted 1965-66 enrollment	5400	2100	+
b. Projected enrollment increase	10,600	600	X
c. Compounded annual increase of 3% in construction costs for seven years	$(1.03)^6$	$(1.03)^6$	X
d. 1965-66 construction costs per student enrolled	$ 3,500	$ 3,500	=
e. Projected financial needs	$ 66,640,000	$11,246,000	+
f. Addition of 10% for movable equipment	$ 6,640,000	$ 1,125,000	+
g. Addition of 5% for land acquisition	$ 3,320,000	$ 563,000	=
h. Total projected financial needs	$ 76,612,000	$12,934,000	
2. 1971-72 through 1975-76			
a. Adjusted 1965-66 enrollment	5400	2100	+
b. Projected enrollment increase from 1965-66	23,300	800	X
c. Compounded annual increase of 3% in construction costs for five years	$(1.03)^{11}$	$(1.03)^{11}$	X
d. 1965-66 construction costs per student enrolled	$ 3,500	$ 3,500	-
e. Projected financial needs	$138,621,000	$14,007,000	+
f. Addition of 10% for movable equipment	$ 13,862,000	$ 1,400,000	+
g. Addition of 5% for land acquisition	$ 6,931,000	$ 700,000	+
h. Total projected financial needs	$159,414,000	$16,107,000	-
i. Less completed construction 1965-66 through 1970-71	$ 82,802,000	$ 3,173,000	
3. 1976-77 through 1980-81			
a. Adjusted 1965-66 enrollment	5400	2100	+
b. Projected enrollment increase from 1965-66	31,500	1100	X
c. Compounded annual increase of 3% in construction costs for five years	$(1.03)^{16}$	$(1.03)^{16}$	X
d. 1965-66 construction costs per student enrolled	$ 3,500	$ 3,500	=
e. Projected financial needs	$206,640,000	$17,920,000	+
f. Addition of 10% for movable equipment	$ 20,664,000	$ 1,792,000	+
g. Addition of 5% for land acquisition	$ 10,332,000	$ 896,000	+
h. Total projected financial needs	$237,636,000	$20,608,000	-
i. Less completed construction 1965-66 through 1975-76	$ 78,220,000	$ 4,501,000	

A new set of space standards was, therefore, developed and forms the basis of the projections of capital improvements contained in this report. These new space standards, which are shown in Table II, reflect a consensus of the Physical Facilities Advisory

Committee acceptable standards used in national studies, and more nearly represent current curriculum trends and physical plant design standards in institutions of higher education.

TABLE II

BASIS FOR SPACE REQUIREMENTS FOR PROJECTION OF PHYSICAL FACILITY NEEDS AT FOUR-YEAR INSTITUTIONS

Gross Square Feet Per Student		
Public:		
Classroom	1.0[1] x 12.41[2] x 1.6[3]	19.86
Instructional Labs	4.5[4] x 3.46[2] x 1.6[3]	24.91
Research		24.00[5]
Faculty		9.00[6]
Sub-Total		77.77
Auxiliary	5 per cent of the above total	3.89
General and Supplementary	3.833[8] x 15.87[2] x 1.6[3]	97.33
Total		178.99
Private:		
Classroom	1.0[1] x 11.85[2] x 1.6[3]	18.96
Instructional Labs	4.5[4] x 2.08[2] x 1.6[3]	14.98
Research		4.00[9]
Faculty		9.00[6]
Sub-Total		46.94
Auxiliary	5 per cent of the above total	2.35
General and Supplementary	3.833[8] x 13.93[2] x 1.6[3]	85.43
Total		134.72

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[1] Based on 15 square feet of space per student; 30 hours of use per week; 50 per cent station utilization when room is in use.

[2] Classroom hours per student based on average student load at all institutions.

[3] Multiple to connect net space to gross space.

[4] Based on 45 square feet of space per student; 20 hours use per week; 80 per cent station utilization when room is in use.

[5] Based on Connecticut Study, 1964.

[6] Based on recommendation of Facility Advisory Committee, Iowa Cooperative Study of Post High School Education.

[7] Based on Colorado Study, 1964.

[8] Based on Colorado Study, 1964.

[9] Adjusted to accourt for the difference in research activity between public and private institutions.

The standards just presented in Table II should allow flexibility in terms of accommodating different uses and enable the achievement of a high degree of utilization. They also have been developed on the basis of a detailed evaluation of the different physical plant needs of the various programs currently being offered at four-year institutions in the state. Finally, the standards reflect the difference in emphasis of programs in individual institutions as well as between public and private four-year institutions.

It is to be noted that the conversion of student clock hour standards to a per student basis in the projection results in a measure of approximately 179 sq. ft. of space per student in public four-year colleges (Regents). For the private institutions, this conversion results in a measure of approximately 135 sq. ft. per student. It should be emphasized that current plant facilities include a substantial amount of non-usable space resulting from the design standards prevailing at the time that the facilities were constructed and which are not necessarily appropriate to the needs of existing curriculum and programs housed in them now. The new space standards are based on higher utilization as a result of more adequate plant design.

Assumptions

Certain assumptions were made in computing the financial needs of four-year institutions for capital improvements. Chief among these were the following:

1. That the enrollment projections summarized in Chapter V will prove to be reasonably accurate.
2. While it is recognized that construction costs for non-residential facilities by type of facility will vary greatly, for purposes of estimating future needs an average of thirty dollars per gross square foot in 1965 was used (exclusive of movable equipment).[1] In addition, these costs will increase 3 per cent per year.[2]
3. That construction costs for residential facilities will average twenty dollars per gross foot in 1965 and will increase in cost by 3 per cent per year.[3] Further, public institutions will provide residential facilities for 50 per cent of their increased enrollment and private institutions 60 per cent; the gross square footage of space required per single student is 237 sq. ft. and 572 sq. ft. per married student.[4] Finally, the division of the increased enrollment is assumed to be 85 per cent single and 15 per cent married in public institutions and 95.8 per cent single and 4.2 per cent married in private institutions.[5]
4. That all existing obsolete space will be replaced by 1970 at a cost of thirty dollars per sq. ft.

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[1] Physical Facilities: A Report to the Illinois Board of Higher Education, December, 1963, p. 3.

[2] Higher Education in Connecticut, December, 1964, p. 232 (footnote 5).

[3] Higher Education in Connecticut, Report of a Survey, Volume 1, Working Papers, December, 1963, p. 232.

[4] College and University Facilities Survey, U.S. Department of Health, Education, and Welfare (Washington U.S. Government Printing Office, 1964), pp. 83-84.

[5] College and University Facilities Survey, U.S. Department of Health, Education, and Welfare (Washington: U.S. Government Printing Office, 1964), p. 84 (adjusted to account for current known trends).

5. That future obsolescence may be calculated on the basis of providing space to accommodate 2 per cent of enrollment and that the cost of replacing future obsolete space is based on the standards used for determining the cost of new construction.[6]
6. That costs of movable equipment will be 10 per cent of total projected financial needs.
7. That costs of land acquisition will be 5 per cent of the total projected financial needs.

Projected Financial Needs

The projected financial needs for capital improvements at public four-year institutions are presented in Table III[7]. Examination of the data reveals that approximately 510 million dollars will need to be invested by 1980-81 for non-residential and residential facilities. Selection of the projected costs for residential space needs, facilities which are generally provided on a self-liquidating basis, places the total requirements at approximately 382 million.

For purposes of current and more short-range planning for non-residential space, approximately 147 million dollars should be expended in the time period 1965 through 1970. Planning for the shorter-range period with the long-range objective identified would permit a continuous review of needs after 1970 so that necessary adjustments could be made before further expenditures beyond 1970. Therefore, if the 1965-1970 estimates proved to be too liberal, planning beyond that date can be curtailed without any adverse effect. Conversely, if the estimate for the 1965-1970 period proved to be too conservative, future planning can be adjusted to take into account additional needs.

The projected financial needs for capital improvements at private four-year institutions are shown in Table IV. Should the foregoing assumption prove to be valid, then an amount of approximately 352 million dollars will be required by 1980 for both non-residential and residential space.

The financial resources needed by private four-year institutions are greatest for the short-range period 1965 through 1970 (86 million), show a sizable decline for the time period 1971 through 1975 (71 million), and increase again for the last five-year period (80 million).

It is to be noted that a sizable percentage of the projected needs for both public and private institutions is due to the inconclusion of a factor for future obsolescence. (See Tables IV, IVB, IVC.) The consideration of costs for future obsolescence has not heretofore characterized long-range physical facility planning of most institutions of higher education. Business and industry, on the other hand, typically incorporate this consideration as a sound basis for planning. Education must also do so.

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[6] Ibid.

[7] Excludes University hospitals, atomic energy laboratory, agricultural experiment station, etc.

TABLE III

PROJECTED FINANCIAL NEEDS FOR CAPITAL IMPROVEMENTS AT PUBLIC FOUR-YEAR INSTITUTIONS: 1970, 1975 and 1980*

(In thousands of dollars)

FACILITIES	1965-66 through 1970-71	1971-72 through 1975-76	1976-77 through 1980-81	TOTAL
NON-RESIDENTIAL FACILITIES				
A. Replacement of Obsolete Space	$ 22, 166	none	none	$ 22, 166
B. Projected New Space	95, 143	$ 65, 288	$ 76, 897	237, 418
C. Depreciation and Rehabilitation	29, 865	39, 208	53, 555	122, 628
TOTAL	$147, 174	$104, 496	$130, 542	$382, 212
RESIDENTIAL FACILITIES	$ 70, 579	$ 24, 516	$ 33, 097	$128, 192
GRAND TOTAL ALL SPACE	$217, 753	$129, 084	$163, 639	$510, 476

*Excluding capital improvement for the University of Iowa Hospitals.

TABLE IV

PROJECTED FINANCIAL NEEDS FOR CAPITAL IMPROVEMENTS AT PRIVATE FOUR-YEAR INSTITUTIONS: 1970, 1975 and 1980

(In thousands of dollars)

FACILITIES	1965-66 through 1970-71	1971-72 through 1975-76	1976-77 through 1980-81	TOTAL
NON-RESIDENTIAL FACILITIES				
A. Replacement of Obsolete Space	$ 6, 784	none	none	$ 6, 784
B. Projected New Space	58, 014	$44, 086	$ 42, 402	144, 502
C. Depreciation and Rehabilitation	20, 885	27, 335	37, 120	85, 340
TOTAL	$ 85, 683	$71, 421	$ 79, 522	$236, 626
RESIDENTIAL FACILITIES	$ 60, 309	$23, 763	$ 31, 159	$115, 231
GRAND TOTAL ALL SPACE	$145, 992	$95, 184	$110, 681	$351, 857

TABLE IVA

COMPUTATION OF FINANCIAL NEEDS FOR CAPITAL IMPROVEMENTS AT FOUR-YEAR INSTITUTIONS
1965-66 through 1970-71

	Public	Private	Computation
NON-RESIDENTIAL FACILITIES			
A. Replacement of Obsolete Space			
1. Obsolete space in 1965-66	73,885	226,127	X
2. Construction cost per square foot in 1965-66	$ 30.00	$ 30.00	=
3. Financial needs	$ 22,165,650	$6,783,810	
B. Projected New Space			
1. Projected enrollment increase	14,100	11,400	X
2. Square feet per student	179	135	X
3. Construction cost per square foot in 1970-71	$ 32.78	$ 32.78	=
4. Financial needs	$ 82,733,000	$50,448,000	+
5. Addition of 10% for movable equipment	$ 8,273,000	$ 5,044,000	+
6. Addition of 5% for land acquisition	$ 4,137,000	$ 2,522,000	=
7. Total projected financial needs	$ 95,143,000	$58,014,000	
C. Future Obsolescence			
1. 2% of projected enrollment in 1970-71	1018	944	X
2. Square feet per student	179	135	X
3. Construction costs per square foot in 1970-71	$ 32.78	$ 32.78	=
4. Average annual obsolescence	$ 5,973,000	$ 4,177,000	X 5 yrs.
5. Total financial needs for obsolescence	$ 29,865,000	$20,885,000	
Total Non-Residential Facilities	$147,173,650	$85,682,810	
RESIDENTIAL FACILITIES			
A. Replacement of Obsolete Space			
1. Obsolete space in 1965-66	184,667	77,481	X
2. Construction cost per square foot in 1965-66	$ 20.00	$ 20.00	=
3. Financial needs	$ 3,693,340	$ 1,549,620	
B. Projected New Space (Single Students)			
1. Projected enrollment increase	14,100	11,400	X
2. Per cent single students	85%	95.8%	X
3. Residential space provided	50%	60%	X
4. Square feet per single student	237	237	X
5. Construction costs per square foot in 1970-71	$ 21.86	$ 21.86	=
6. Financial needs	$ 31,048,654	$ 33,948.47	+
7. Addition of 10% for movable equipment	$ 3,105,000	$ 3,395,000	+
8. Addition of 5% for land acquisition	$ 1,553,000	$ 1,699,000	=
9. Total projected financial needs	$ 35,707,000	$39,042,000	

TABLE IVA (continued)

	Public	Private	Computation
C. Projected New Space (Married Students)			
1. Projected enrollment increase	14, 100	11, 400	X
2. Per cent married students	15%	4.2%	X
3. Residential space provided	50%	60%	X
4. Square feet per married student	572	572	X
5. Construction cost per square foot in 1970-71	$ 21.86	$ 21.86	=
6. Financial needs	$ 13, 229, 000	$ 3, 592, 000	+
7. Addition of 10% for movable equipment	$ 1, 323, 000	$ 359, 000	+
8. Addition of 5% for land acquisition	$ 661, 000	$ 179, 000	=
9. Total projected financial needs	$ 15, 213, 000	$ 4, 130, 000	
D. Future Obsolescence (Single Students)			
1. 2% of projected enrollment in 1970-71	1018	944	X
2. Per cent single students	85%	95.8%	X
3. Residential space provided	50%	60%	X
4. Square feet per single student	237	237	X
5. Construction cost per square foot in 1970-71	$ 21.86	$ 21.86	=
6. Average annual obsolescence	$ 2, 243, 000	$ 2, 808, 000	X5 yrs.
7. Total financial needs for obsolescence	$ 11, 215, 000	$14, 040, 000	
E. Future Obsolescence (Married Students)			
1. 2% of projected enrollment in 1970-71	1018	944	X
2. Per cent married students	15%	4.2%	X
3. Residential space provided	50%	60%	X
4. Square feet per married student	572	572	X yrs.
5. Construction cost per square foot in 1970-71	$ 21.86	$ 21.86	=
6. Average annual obsolescence	$ 950, 298	$ 300, 094	X5
7. Total financial needs for obsolescence	$ 4, 751, 000	$ 1, 547, 000	
Total Residential Facilities	$ 70, 579, 000	$60, 309, 000	
GRAND TOTAL ALL SPACE	$217, 753, 000	$145, 992, 000	

TABLE IVB

COMPUTATION OF FINANCIAL NEEDS FOR CAPITAL IMPROVEMENTS AT FOUR-YEAR INSTITUTIONS 1971-72 through 1975-76

	Public	Private	Computation
NON-RESIDENTIAL FACILITIES			
A. Replacement of Obsolete Space	None	None	
B. Projected New Space			
1. Projected enrollment increase	8, 600	7, 700	X
2. Square feet per student	179	135	X

TABLE IVB (continued)

	Public	Private	Computation
3. Construction cost per square foot in 1975-76	$ 36.88	$ 36.88	=
4. Financial needs	$ 56,773,000	$38,337,000	
5. Addition of 10% for movable equipment	$ 5,677,000	$ 3,833,000	
6. Addition of 5% for land acquisition	$ 2,838,000	$ 1,916,000	
7. Total projected financial needs	$ 65,288,000	$44,086,000	
C. Future Obsolescence			
1. 2% of projected enrollment in 1975-76	1190	1098	X
2. Square feet per student	179	135	X
3. Construction costs per square foot in 1975-76	$ 36.88	$ 36.88	=
4. Average annual obsolescence	$ 7,856,000	$ 5,467,000	X5 yrs.
5. Total financial needs for obsolescence space	$ 39,280,000	$27,335,000	
Total Non-Residential Facilities	$104,496,000	$71,421,000	
RESIDENTIAL FACILITIES			
A. Replacement of Obsolete Space	None	None	
B. Projected New Space (Single Students)			
1. Projected enrollment increase	8,600	7,700	X
2. Per cent single students	85%	95.8%	X
3. Residential space provided	50%	60%	X
4. Square feet per single student	237	237	X
5. Construction cost per square foot in 1975-76	$ 24.62	$ 24.62	=
6. Financial needs	$ 2,133,000	$ 2,583,000	+
7. Addition of 10% for movable equipment	$ 213,000	$ 258,000	+
8. Addition of 5% for land acquisition	$ 107,000	$ 129,000	=
9. Total projected financial needs	$ 2,453,000	$ 3,070,000	
C. Projected New Space (Married Students)			
1. Projected enrollment increase	8,600	7,700	X
2. Per cent married students	15%	4.2%	X
3. Residential space provided	50%	60%	X
4. Square feet per married student	572	572	X
5. Construction cost per square foot in 1975-76	$ 24.62	$ 24.62	=
6. Financial needs	$ 908,000	$ 273,000	+
7. Addition of 10% for movable equipment	$ 90,000	$ 27,000	+
8. Addition of 5% for land acquisition	$ 45,000	$ 13,000	=
9. Total projected financial needs	$ 1,043,000	$ 313,000	
D. Future Obsolescence (Single Students)			
1. 2% of projected enrollment in 1975-76	1190	1098	X
2. Per cent single students	85%	95.8%	X
3. Residential space provided	50%	60%	X
4. Square feet per single student	237	237	X
5. Construction cost per square foot in 1975-76	$ 24.62	$ 24.62	=
6. Average annual obsolescence	$ 2,951,000	$ 3,682,000	X5 yrs.
7. Total financial needs for obsolescence	$ 14,755,000	$18,410,000	

TABLE IVB (continued)

	Public	Private	Computation
E. Future Obsolescence (Married Students)			
1. 2% of projected enrollment in 1975-76	1190	1098	X
2. Per cent married students	15%	4.2%	X
3. Residential space provided	50%	60%	X
4. Square feet per married student	572	572	X
5. Construction cost per square foot in 1975-76	$ 24.62	$ 24.62	=
6. Average annual obsolescence	$ 6,265,000	$ 1,970,000	
7. Total financial needs for obsolescence	$ 6,265,000	$ 1,970,000	
Total Residential Facilities	$ 24,516,000	$23,763,000	
GRAND TOTAL ALL SPACE	$129,084,000	$95,184,000	

TABLE IVC

COMPUTATION OF FINANCIAL NEEDS FOR CAPITAL IMPROVEMENTS AT FOUR-YEAR INSTITUTIONS

1976-77 through 1980-81

	Public	Private	Computation
NON-RESIDENTIAL FACILITIES			
A. Replacement of Obsolete Space	None	None	
B. Projected New Space			
1. Projected enrollment increase	8,500	6,200	X
2. Square feet per student	179	135	X
3. Construction costs per square foot in 1980-81	$ 44.00	$ 44.00	=
4. Financial needs	$ 66,946,000	$36,828,000	
5. Addition of 10% for movable equipment	$ 4,694,000	$ 3,682,000	
6. Addition of 5% for land acquisition	$ 3,347,000	$ 1,891,000	
7. Total projected financial needs	$ 76,987,000	$42,402,000	
C. Future Obsolescence			
1. 2% of projected enrollment in 1980-81	1360	1222	X
2. Square feet per student	179	135	X
3. Construction cost per square foot in 1980-81	$ 44.00	$ 44.00	=
4. Average annual obsolescence	$ 10,711,000	$ 7,424,000	X 5 yrs.
5. Total financial needs for obsolescence	$ 53,555,000	$37,120,000	
Total Non-Residential Facilities	$130,542,000	$79,522,000	
RESIDENTIAL FACILITIES			
A. Replacement of Obsolete Space	None	None	
B. Projected New Space (Single Students)			
1. Projected enrollment increase	8,500	6,200	X

TABLE IVC (continued)

	Public	Private	Computation
2. Per cent single students	85%	95.8%	X
3. Residential space provided	50%	60%	X
4. Square feet per single student	237	237	X
5. Construction cost per square foot in 1980-81	$ 29.40	$ 29.40	=
6. Financial needs	$ 2,517,000	$ 2,483,000	+
7. Addition of 10% for movable equipment	$ 252,000	$ 248,000	+
8. Addition of 5% for land acquisition	$ 176,000	$ 124,000	=
9. Total projected financial needs	$ 2,945,000	$ 2,855,000	
C. Projected New Space (Married Students)			
1. Projected enrollment increase	8,500	6,200	X
2. Per cent married students	15%	4.2%	X
3. Residential space provided	50%	60%	X
4. Square feet per married student	572	572	X
5. Construction costs per square foot in 1980-81	$ 29.40	$ 29.40	=
6. Financial needs	$ 1,254,000	$ 1,073,000	+
7. Addition of 10% for movable equipment	$ 125,000	$ 107,000	+
8. Addition of 5% for land acquisition	$ 63,000	$ 54,000	=
9. Total projected financial needs	$ 1,442,000	$ 1,234,000	
D. Future Obsolescence (Single Students)			
1. 2% of projected enrollment in 1980-81	1360	1222	X
2. Per cent single students	85%	95.8%	X
3. Residential space provided	50%	60%	X
4. Square feet per single student	237	237	X
5. Construction costs per square foot in 1980-81	$ 29.40	$ 29.40	=
6. Average annual obsolescence	$ 4,027,000	$ 4,893,000	X 5 yrs.
7. Total financial needs for obsolescence	$ 20,135,000	$24,465,000	
E. Future Obsolescence (Married Students)			
1. 2% of projected enrollment in 1980-81	1360	1222	X
2. Per cent married students	15%	4.2%	X
3. Residential space provided	50%	60%	X
4. Square feet per married student	572	572	X
5. Construction cost per square foot in 1980-81	$ 29.40	$ 29.40	=
6. Average annual obsolescence	$ 1,715,000	$ 521,000	X 5 yrs.
7. Total financial needs for obsolescence	$ 8,575,000	$ 2,605,000	
Total Residential Facilities	$ 33,097,000	$31,159,000	
GRAND TOTAL ALL SPACE	$163,639,000	$110,681,000	

Conclusions and Recommendations

Certain conclusions can be drawn and recommendations made as a result of the projections of capital improvements contained in this chapter. Chief among these are the following, grouped by type of institution:

Public Two-Year Institutions

The new public area community colleges have available the following major sources of revenue for capital expenditures: 1) authorization, with voter approval, to levy up to three-fourths of one mill for purchase of sites, equipment, etc.; 2) authorization, with voter approval, to incur bounded indebtedness not to exceed 5 per cent of assessed valuation and/or ten mills annually for retirement of indebtedness; 3) federal appropriation; and 4) state appropriations.

As shown in Table V, the three-fourths of one mill tax levy will not produce a substantial proportion of the projected 76.6 million dollars needed by public two-year institutions by 1970-71. Should all of the proposed sixteen area districts secure authorization to levy the tax, a maximum of approximately twenty-one million could be raised.

To what extent boards responsible for public two-year institutions should attempt to secure voter authorization to incur bonded indebtedness for physical facilities is questionable. Valid planning decisions cannot be made regarding the future role of the federal government. It may be assumed that there will be increased federal activity. As of this time the level of support is estimated at 20 to 28 per cent.

What does seem patently clear is that state appropriations will need to be significantly increased in the foreseeable future if public two-year institutions are to have available large numbers of students who will seek educational opportunities in these institutions. One alternative to an ambitious state appropriation program would appear to be a greater reliance on local tax sources and the accompanying hazards of engaging voter resistance.

Private Four-Year and Two-Year Institutions

Private four-year and two-year institutions in Iowa must invest more than 256 million dollars for non-residential facilities by 1980. The short-range projected financial requirements are that approximately ninety-eight million will be required by 1970.

In both private two-year and four-year institutions, it is questionable whether or not the 1960 to 1965 levels of support for capital improvements will be adequate to meet the increased demands for financial resources. This is true primarily because not all individual institutions share equally in the existing levels of support, particularly revenues secured from endowments, grants, and gifts.

Several alternatives are open to Iowa's private institutions. One relates to a somewhat higher utilization of existing space although this practice would accommodate only a small percentage of the anticipated enrollment increase unless it was accompanied

TABLE V

POTENTIAL REVENUE RESULTING FROM THREE-FOURTHS MILL TAX LEVY IN AREA COMMUNITY COLLEGE AND VOCATIONAL-TECHNICAL DISTRICTS[1]

Area	Estimated 1965-66 Assessed Valuation	Annual Funds Resulting From 3/4 Mill Tax Levy
I	$230,245,446	$ 172,650
II	364,134,094	273,075
III	247,377,245	185,550
IV	182,423,768	136,800
V	482,863,951	362,175
VI	252,020,452	189,000
VII	405,555,706	304,200
VIII	226,200,000	169,650
IX	443,427,389	332,550
X	607,606,912	455,700
XI	913,809,983	685,350
XII	304,278,390	228,225
XIII	381,823,068	286,350
XIV	183,702,051	137,775
XV	300,662,750	225,525
XVI	206,120,049	154,575
Total	$5,732,250,854	$4,299,150

[1] Source: Department of Public Instruction, Des Moines, Iowa.

by pronounced internal policy changes relating to late afternoon, evening, and Saturday scheduling of classes.

Private institutions can, of course, set a limit on size. This in time would cause higher enrollments in Regents institutions and community colleges.

If private higher education is to maintain its enrollment as projected in this study, it will need a vastly improved program of private gifts and grants, and an increase in federal funds and some form of state support.

Regents Institutions

The projected financial estimates for capital improvements at Regents institutions in the state in the next one and one-half decades indicate that a monumental task confronts the state, if the estimates are even close. Approximately 382 million dollars will be required for non-residential space by 1980. The shorter-range projection indicates that over 147 million dollars will need to be invested for non-residential facilities by 1970.

This report has not attempted to divide the amounts needed among the traditional sources of revenues for capital improvement (state and federal appropriations and non-governmental sources).

The state, recognizing the magnitude of the problem, might consider an approach to financing facilities that has been practiced successfully in other states; that is permit the issuance of bonds for capital improvements. This plan enables the public institutions to plan better, to build when costs are most favorable, and of most importance, it provides an opportunity for future generations who will use the facilities to participate in paying for them. The present pay-as-you-go plan, desirable as it may be, has not served this state in the past nor is it reasonable to expect that it will do so in the future.

The case for long-range capital financing at the state's public four-year institutions has been made many times in the past. Most recently, a report of a special Interinstitutional Committee on Long-Range Capital Financing offered these arguments:

> "The people of the state of Iowa have two choices regarding the state institutions of higher education: they can finance an accelerated building program so that the institutions can meet the increasing demands for educational opportunities, or they can, by inaction, indicate their desire that enrollments at the state institutions be limited. Assuming the state does not want enrollments limited, what is needed now is a method of financing whereby there can be long-range planning and construction of buildings and other facilities when they are needed.
>
> "The state has attempted to build improvements for the next 100 years out of current revenues of each biennium. Very few home owners or businessmen can finance their homes or businesses in this manner. Most capital improvements made by local governmental units -- municipal, county and school -- are financed over a long period of years. Strangely enough, only at the state level is there a completely unrealistic debt limit imposed by the constitution. It is true that this debt limit can be overcome by legislative action and public referendum, but it is very unlikely that either the legislature or the public would be willing at this time to create a debt that must be financed through a general property tax.
>
> "If it is logical for the private sector and the local government sector to finance capital improvements on a long-term basis, then it also is logical for the state to do so. If this is done, each generation will contribute its share toward facilities that are used by many generations. Each generation has a responsibility with respect to providing education facilities used by many generations."[8]

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[8] Preliminary Report of the Interinstitutional Committee on Capital Financing," (Prepared for the State Board of Regents) June, 1966, p. 1.

This same report made reference to an earlier report by a similar committee in 1960.[9] The committee in 1960 advanced the following arguments which are still valid today:

1. To catch up with accumulated needs resulting from inadequate appropriations for the past twenty-five years.
    a. Replace war-time temporary buildings still in use.
    b. Replace obsolete and hazardous buildings.
    c. Modernize existing permanent buildings to meet constantly changing needs of teaching, research, and service.
    d. Prepare for lasting enrollment increases.
2. To permit more orderly planning.
3. To provide for more efficient use of funds.
4. To permit planning on a unit basis.
5. To control timing of construction to meet the most pressing needs.
6. To hold expenditures for temporary construction to a minimum.
7. To avoid feast or famine appropriations.

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[9] Ibid, p. 2.

CHAPTER X

ANALYSIS OF EXPENDITURES AND INCOME PATTERNS

Determination of financial needs of post high school education in the state and of groups of institutions within the state must begin with a knowledge of the financial characteristics of the institutions offering post high school programs.

As one might expect, the diversity of Iowa institutions is reflected in numerous ways, but particularly in the financial operations of the institutions. As emphasis is given to a particular program or curriculum, a corresponding emphasis will appear in the financial base supporting or undergirding that program or curriculum. Consequently, comparisons of the financial operations among the various institutions are difficult to make and also dangerous to employ since implications drawn from such comparisons may be totally meaningless and/or invalid.

While most institutions followed the financial accounting and reporting procedures recommended by the American Council on Education,[1] institutions differed appreciably in the application of certain procedures. Although efforts were made to reconcile major differences in reporting practices and to develop a standardized reporting system, differences nonetheless still existed. As a result, there is a serious restriction on the use of the data collected for this study for valid comparative purposes.

Furthermore, the data presented represent only a single year of operation. Thus, expenditures or income in the several categories may or may not be "typical." For example, it could be that tuition rates were increased in a number of institutions during the year under investigation, or an unusually small or unusually large expenditure for plant additions occurred during the 1964-65 school year.

Nonetheless, it is felt that the data contained herein represent a reasonably accurate and comprehensive picture of the financial resources of post high school education in the state and the patterns of institutional finances.

Expenditures

Expenditures of post high school institutions have been classified into two major categories: educational and general operations and plant additions.

The thirty-eight institutions reporting financial data to this study[2] expended approximately 167 million dollars in 1964-65 for educational and general operating expenditures and physical plant additions, not including approximately eighty-two million dollars expended on associated activities such as cafeteria, dormitory services, and bookstores. As shown in Table I, more than three-fourths (77.5 per cent) of this sum was expended for educational and general operation.[3]

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[1] American Council on Education, College and University Business (American Council on Education, Washington, D.C., 1952).

[2] See Chapter I for reporting institutions.

[3] Data on physical plant expenditures and projections are presented in Chapters VII and IX.

Included in educational and general operating expenditures are expenses from the following eight sub-categories.

a. General Administration
b. General Expense
c. Instruction and Departmental Research[4]
d. Organized Activities
e. Organized Research
f. Extension and Public Service
g. Library
h. Physical Plant (Maintenance, etc.)

The amount and per cent of educational and general operating expenditures of the thirty-eight reporting institutions, 1964-65, grouped by type of institution and by category of expenditure, is shown in Table II.

Instruction and departmental research as the primary function of all post high school institutions accounted for the single largest percentage of expenditures in each group of institutions and accounted for more than one-third (35.9 per cent) of the total expenditures for all institutions. Considerable variation is to be noted, however, among the four types of institutions with regard to the percentage of educational and general operating expenditures devoted to instruction and departmental research. More than two-thirds (68.8 per cent) of the expenditures of community colleges were thus allocated. This percentage was appreciably less for private two-year colleges (48.3 per cent), private four-year colleges (46.5 per cent), and Regents institutions (32.4 per cent).

The difference in amounts shown going to instruction and departmental research among the colleges does not necessarily reflect a difference in emphasis on instruction among the institutions, but rather reflects the different functions of the institutions. In addition to instruction there are two other widely held functions of post high school institutions, namely research and service. The expenditures of the institutions reflect the quantitative performance of the functions, but not necessarily the qualitative performance of those functions.

Community colleges, for example, reported no expenditures in organized activities, organized research, and only a small amount of their budget (0.4 per cent) in extension and public service. Hence, instruction, as their primary and central function, was also the central part of their budget.

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[4] The difference between departmental research (included in the instruction account) and organized research is not based upon the nature of the research but upon budgeting and accounting control. Generally, organized research includes projects which are 1) the result of a special gift or grant, 2) so large that the institution has established a separate account, or 3) carried out by a separate organizational unit, such as a research bureau. Budgetary procedures prohibit a breakdown of this expenditure into the two divisions: 1) instruction and 2) research.

TABLE I

EXPENDITURES OF 38 IOWA COLLEGES AND UNIVERSITIES FOR EDUCATIONAL AND GENERAL OPERATIONS AND PLANT ADDITIONS FOR THE FISCAL YEAR 1964-65

	Educational and General Operations		Plant Additions		Total Expenditures	
	Amt. in Dollars	Per cent	Amt. in Dollars	Per cent	Amt. in Dollars	Per cent
Private Two Year (N = 2)	$ 690,878	87	$ 99,966	13	$ 790,844	100
Community Colleges (N = 11)	2,452,662	96	100,811	4	2,553,473	100
Private Four-Year (N =22)	25,220,890	63	15,006,731	37	40,227,621	100
Regents Institutions (N = 3)	101,215,772	82	22,227,846	18	123,443,618	100
TOTAL	$129,580,204	78	$37,435,354	22	$167,015,556	100

On the other hand, the Regents institutions, as more comprehensive institutions, are expected to provide research and service to both the state and nation, and this is reflected in the expenditures for organized research (25.6 per cent of the total) and extension and public service (8.1 per cent of the budget). Organized activities, hospitals, lab schools, etc., in addition to providing service and research opportunities, are also an integral part of the educational instructional program. Most of the research, service, and organized activities of the Regents institutions are supported by fees collected or outside funds (e.g. federal contracts), and if the table showed only that portion of expenditures which came from state funds or were not reimbursed by fees or outside funds, the proportion for instruction and departmental research would be higher.

The private colleges, for the most part, are single-purpose instruction-oriented, although several are involved in extensive research and service. It should be noted, however, that certain private colleges (Catholic) estimated the value of the voluntary service provided by nuns and priests; since these estimates tended to be low, the proportion of the budget devoted to instruction and departmental research in both private two-year and four-year colleges is perhaps 10 to 15 per cent greater than shown.

The distribution of educational and general operating expenditures for each of the four types of institutions is shown separately in Figures 1 to 4, inclusive.

Data regarding the per cent of current educational and general operating expenditures of public and private two-year and four-year institutions in the nation are presented in Table III.[5] The national study, which was published in 1964, identifies the

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[5] F. H. Lindsay, Financial Statistics of Institutions of Higher Education, U. S. Office of Education (Washington: U.S. Government Printing Office, 1964.)

TABLE II

AMOUNT AND PERCENT OF EDUCATIONAL AND GENERAL OPERATING EXPENDITURES OF 38 IOWA COLLEGES DURING THE FISCAL YEAR 1964-65, BY TYPE OF COLLEGE AND BY TYPE OF EXPENDITURE

Type of Expenditure	Type of Institution									
	N = 2 Private Two-Year		N = 11 Community Colleges		N = 3 Regents Institutions		N = 22 Private Four-Year		N = 38 Total	
	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.	%
General Administration	$104,794	15.2	$ 169,012	6.9	$ 1,399,608	1.4	$ 2,115,240	8.4	$ 3,788,654	2.9
General Expense										
1. Student Services	56,062	8.1	117,544	4.8	2,656,835	2.6	2,513,058	10.0	5,343,499	4.1
2. Staff Benefits			104,825	4.3	53,832	0.1	758,769	3.0	917,426	0.7
3. General Inst. Expense	72,989	10.6	35,799	1.6	1,271,831	1.3	2,658,588	10.5	4,039,207	3.1
Instruction and Dept. Research	333,511	48.3	1,688,684	68.8	32,772,597	32.4	11,724,624	46.5	46,519,416	35.9
Organized Activities	18,882	2.7			20,619,754	20.6	431,106	1.7	21,069,742	16.3
Organized Research					25,876,282	25.6	222,225	0.9	26,098,507	20.1
Extension and Public Service	750	0.1	9,214	0.4	8,220,708	8.1	258,939	1.0	8,489,611	6.6
Library	31,168	4.5	98,980	4.0	2,461,554	2.4	1,414,435	5.6	4,006,139	3.1
Physical Plant	72,722	10.5	228,604	9.3	5,882,771	5.8	3,123,906	12.4	9,308,003	7.2
TOTAL*	$690 878	100.0	$2,452,662	100.0	$101,215,772	100.0	$25 220,890	100.0	$129,580,204	100.0

Total may not equal 100 percent due to rounding.

patterns of expenditures of institutions of higher education for the year 1959-60. Even though the dollar amounts of expenditures have changed substantially in the years since the national survey, it was assumed that the proportion of expenditures by type of function remained essentially the same.

Private two-year colleges in Iowa compared favorably with their national counterparts in these categories of educational and general operating expenditures: instruction and departmental research, organized activities, organized research, extension and public service, and library. Their reported percentage of expenditures was appreciably (more than 3 per cent) greater for general administration and general expense (33.9 per cent compared to 25.7 per cent) and appreciably smaller for physical plant expenditures (10.5 per cent compared to 20.9 per cent).

Figure 1
DISTRIBUTION OF EDUCATIONAL AND GENERAL EXPENDITURES
BY CATEGORY OF TWO-YEAR PRIVATE COLLEGES,
FISCAL YEAR 1964-1965

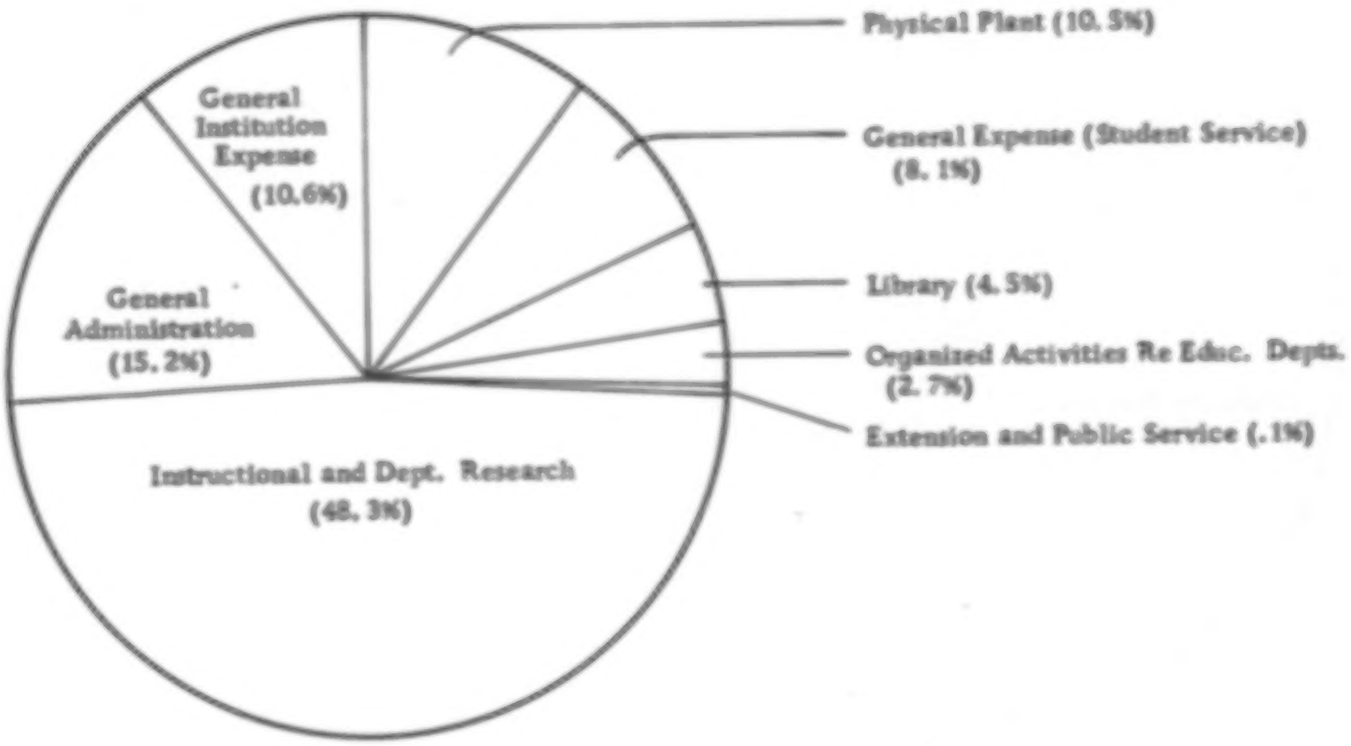

Figure 2
DISTRIBUTION OF EDUCATIONAL AND GENERAL EXPENDITURES
BY CATEGORY OF TWO-YEAR PUBLIC COLLEGES,
FISCAL YEAR 1964-1965

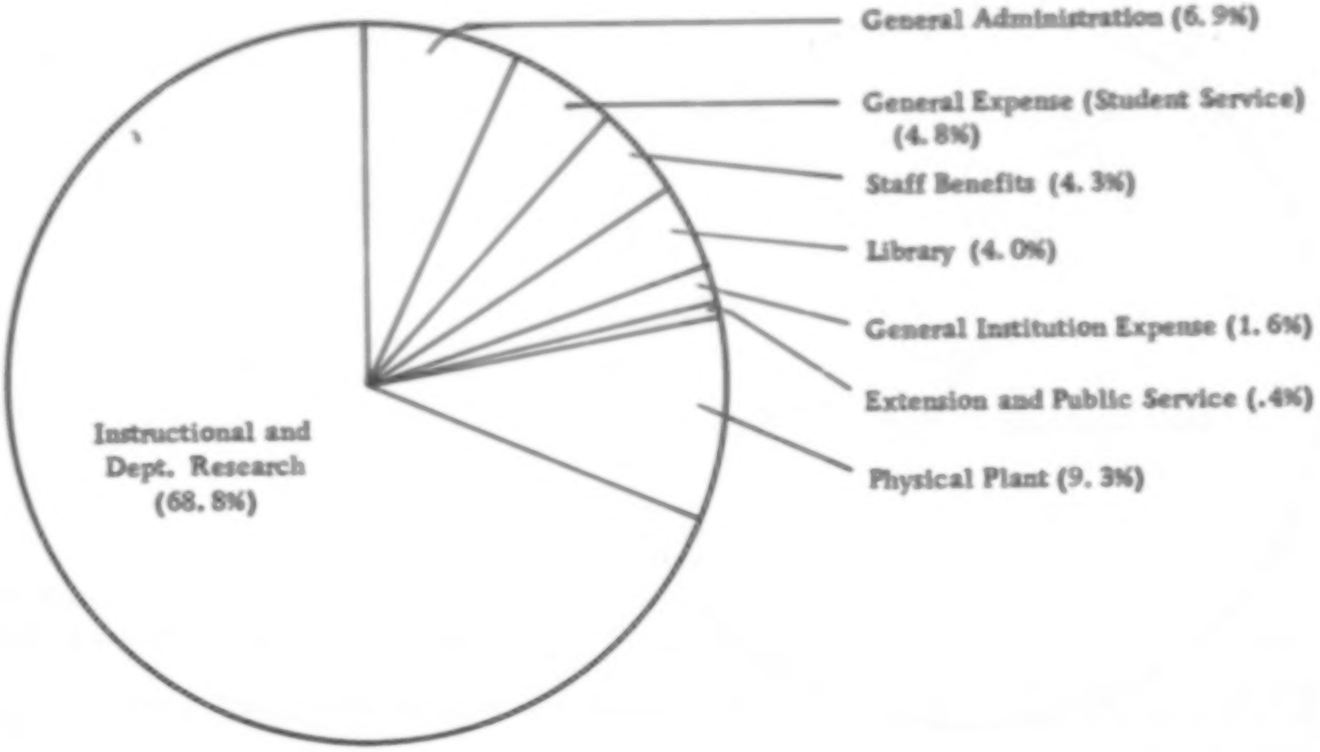

Figure 3
DISTRIBUTION OF EDUCATIONAL AND GENERAL EXPENDITURES BY CATEGORY OF PUBLIC FOUR-YEAR SCHOOL, FISCAL YEAR 1964-1965

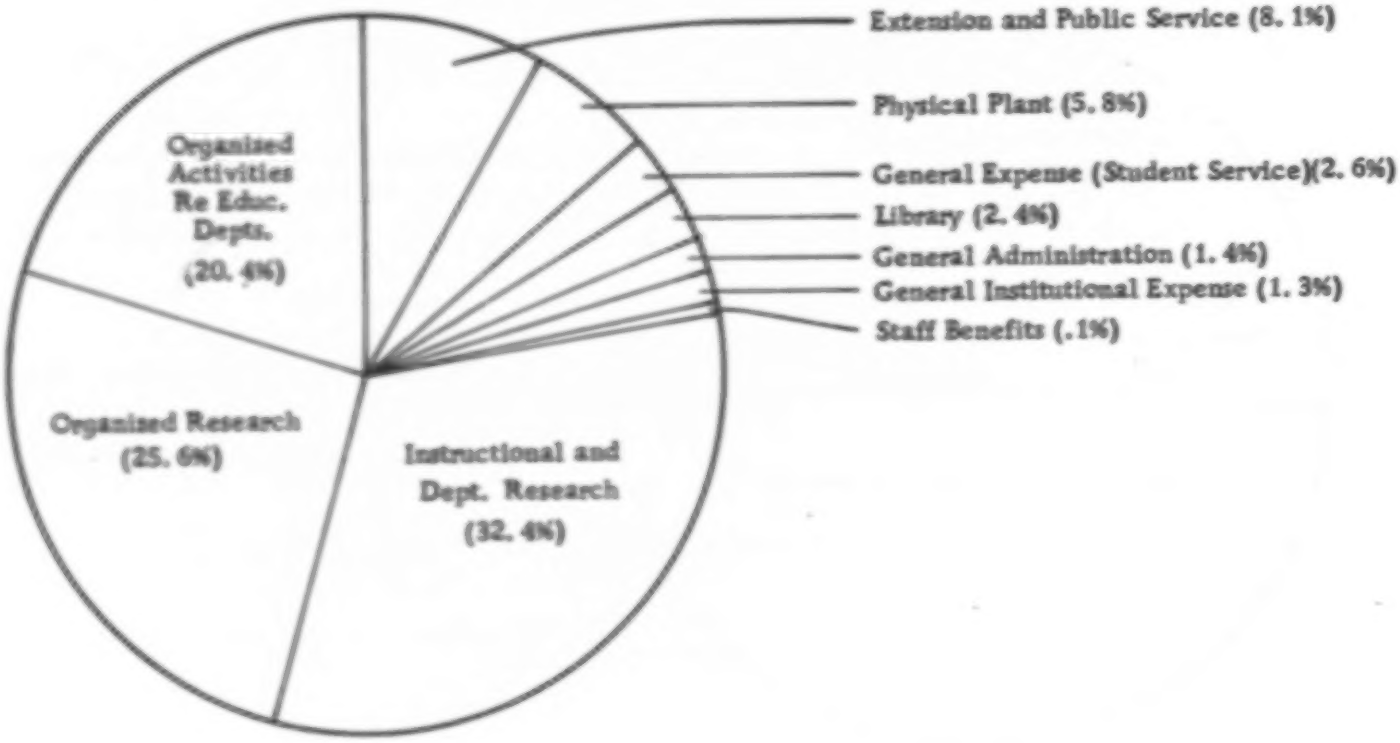

Figure 4
DISTRIBUTION OF EDUCATIONAL AND GENERAL EXPENDITURES BY CATEGORY OF FOUR-YEAR PRIVATE COLLEGES, FISCAL YEAR 1964-1965

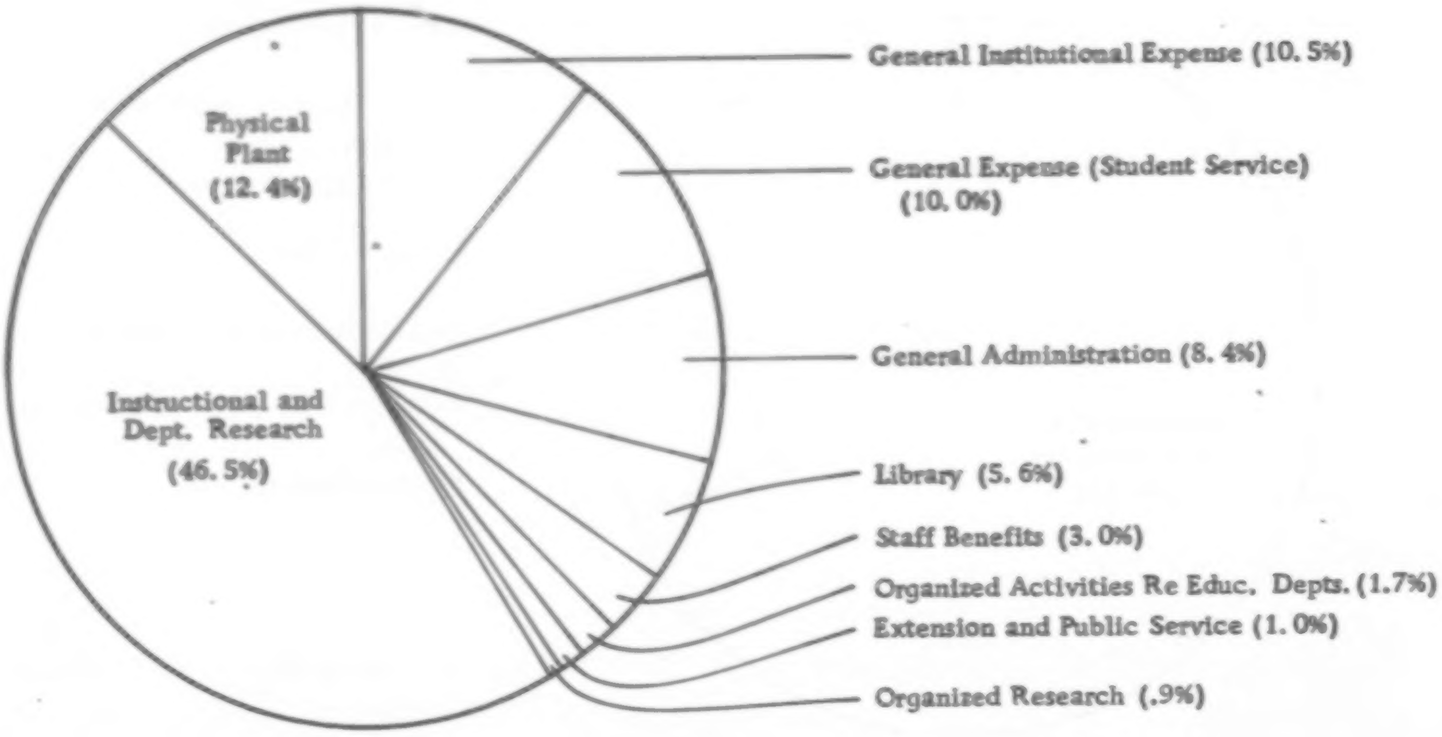

TABLE III

PER CENT OF CURRENT EDUCATIONAL AND GENERAL OPERATING EXPENDITURES BY TYPE OF FUNCTION AND BY TYPE OF COLLEGE, AGGREGATE UNITED STATES 1959-60

	Private Two-Year Colleges		Public Two-Year College		Public Four-Year Colleges		Private Four-Year Colleges	
	U.S.	Iowa	U.S.	Iowa	U.S.	Iowa	U.S.	Iowa
General Administration and General Expense	25.7%	33.9%	14.6%	17.6%	8.3%	5.4%	24.9%	31.9%
Instruction and Dept. Research	47.4	48.3	65.3	68.8	33.8	32.4	50.1	46.5
Organized Activities	0.7	2.7	0.7	- -	8.4	20.4	1.8	1.7
Organized Research	1.2	- -	- -	- -	28.0	25.6	2.8	0.9
Extension and Public Service	- -	0.1	- -	0.4	10.2	8.1	0.6	1.0
Library	3.6	4.5	2.8	4.0	2.5	2.4	4.5	5.6
Physical Plant	20.9	10.5	15.1	9.3	8.2	5.8	15.3	12.4

Source: F. H. Lindsay, Financial Statistics of Institutions of Higher Education, U.S. Office of Education (Washington: U.S. Government Printing Office, 1964).

Public two-year colleges in Iowa compared favorably with the national averages for this type of institution in the percentage of expenditures. On a national comparison, Iowa community colleges devoted slightly more to general administration (17.6 per cent compared to 14.6 per cent) and instruction and departmental research (68.8 per cent compared to 65.3 per cent). Physical plant expenditures (9.3 per cent compared to 15.1 per cent) were significantly lower.

The Regents institutions conformed to national patterns of expenditures more closely than did the other three types of institutions. The single exception related to organized activities, where 20.4 per cent of the total expenditures of Iowa institutions was appreciably greater than the 8.4 per cent reported for similar institutions in the national study.

Private four-year colleges in Iowa compared favorably with their national counterparts in five of the seven categories of expenditures. In the remaining two, they were greater in the category of general administration and general expense (31.9 per cent compared to 24.9 per cent), and less in the category of instruction and departmental research (46.5 per cent compared to 50.1 per cent).

Computation of Per Student Costs Not Feasible

Numerous procedures for estimating "expenditures per student" in institutions of higher education have been proposed and implemented. Authorities in the field cannot agree on one or two "best" procedures, thus there are many, no one of which is satisfactory for all types of institutions -- or for similar institutions. Although the great number of recommended procedures attest to the fact that such information is eagerly sought, they also attest to the fact that no consensus has emerged as to the manner in which such a cost figure is to be computed.

Even if a cost figure is determined, it is very difficult to use in making comparisons between types of institutions as: 1) expenditures of institutions offering different kinds or levels of programs (graduate, professional, terminal, etc.) will vary substantially, 2) different budgetary procedures will greatly influence the assignment of expenditures, and 3) different student personnel accounting procedures (full-time and/or part-time student, degree or non-degree student, ADA, etc.) will greatly influence the assignment of expenditures.

In view of the serious difference in the methods of computing cost data and in view of the serious limitations and restrictions on their use, the staff of the Study, after several attempts to use various methods, came to the conclusion that such data would be more confusing than helpful in understanding financing patterns.

Income

In 1964-65, the thirty-eight Iowa public and private two-year and four-year institutions reporting received approximately 261 million dollars of income from three major categories of support: educational and general income (133.3 million), capital outlay (37 million), and auxiliary enterprises (91 million).

The major focus of attention is upon the 133.3 million dollars of support in the form of educational and general income.[6] For purposes of analysis, this category of income has been further classified into the following seven sub-categories:

a. Student Fees
b. Government Appropriations
c. Endowment Income
d. Gifts and Grants
e. Sales and Services of Educational Departments
f. Organized Activities Relating to Educational Departments
g. Other Sources

The amount and per cent of educational and general income, grouped by type of institution and by category of income, is shown in Table IV.

The data of course reveals considerable variation among the institutions within a specific institutional category in addition to the variations by types of institution.

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[6] Income from capital needs is discussed in Chapters VIII and IX. Income from auxiliary enterprises (e.g. bookstores, dormitories, student unions) is usually reverted back to the support of such activities, making them self supporting; such income is therefore not included in this report.

TABLE IV

AMOUNT AND PER CENT OF EDUCATIONAL AND GENERAL INCOME OF IOWA COLLEGES AND UNIVERSITIES FOR THE FISCAL YEAR 1964-65, CLASSIFIED BY TYPE OF INCOME AND BY TYPE OF COLLEGE

	Type of College									
	Private Two-Year		Community College		Regents Institutions		Private Four-Year		Total	
Type of Income	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.	%
Student Fees										
Tuition	$420,548	73.0	$ 968,250	36.9	$ 11,263,797	11.2	$19,614,607	66.8	$ 32,267,202	24.2
Required Fees	27,937	4.8	66,536	2.5	- - - - -	- -	1,567,257	5.3	1,661,730	1.2
Government Appropriations										
Federal	- - - -	- -	80,542	3.1	4,052,686	4.0	471,500	1.6	4,604,728	3.4
State	- - - -	- -	859,355	32.9	48,074,304	47.7	- - - - -	- -	48,933,659	36.7
Local	- - - -	- -	615,060	23.5	- - - - -	- -	- - - - -	- -	615,060	0.5
Endowment	4,229	0.7	13,800	0.5	88,284	0.1	1,904,035	6.5	2,010,348	1.5
Gifts and Grants										
Federal	- - - -	- -	- - - -	- -	22,926,696	22.8	370,293	1.3	23,912,049	17.9
Other	82,450	14.3	6,198	0.2	2,894,092	2.9	3,700,040	12.6	6,682,780	5.0
Sales and Services of Educational Depts.	16,755	3.0	5,169	0.2	434,129	0.4	66,818	0.2	522,871	0.3
Organized Activities relating to Educ. Dept.	19,420	3.4	- - -	- -	10,890,523	10.8	213,694	0.7	11,123,637	8.3
Other Sources	5,476	1.0	6,629	0.3	101,226	0.1	1,469,180	5.0	1,582,511	1.1
TOTAL*	$576,815	100.2	$2,621,539	100.1	$100,725,737	100.0	$29,377,424	100.0	$133,301,515	100.1

*Total may not equal 100 per cent due to rounding.

Student fees in the form of income from tuition and required fees was by far the largest single source of educational and general income for the private two-year and private four-year colleges. Fees provided institutions with 77.8 per cent and 72.1 per cent of their income, respectively. In contrast, the community colleges and Regents institutions relied on these sources for a far smaller percentage of revenue, 39.4 per cent and 11.2 per cent, respectively.

Community colleges relied upon state and local government appropriations for the greatest proportion of their educational and general income, with more than one-half (56.4 per cent) of their income coming from these two sources.

The Regents institutions received 47.7 per cent of their income from state appropriations, with an additional 4.0 per cent received from federal appropriations and 22.8 per cent from federal gifts and grants.

Figure 5
DISTRIBUTION OF EDUCATIONAL AND GENERAL INCOME OF TWO-YEAR PRIVATE COLLEGES FROM EACH OF SEVEN SOURCES, FISCAL YEAR 1964-1965

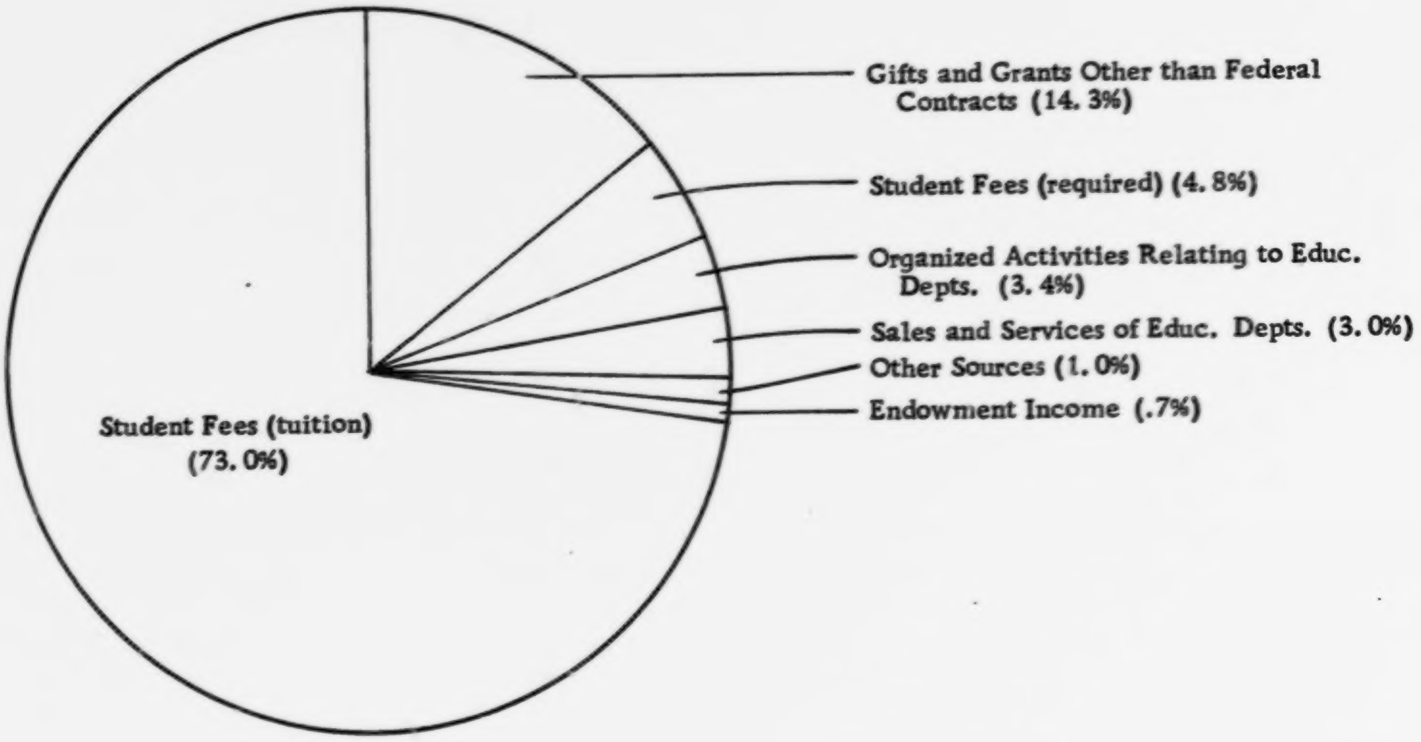


Figure 6
DISTRIBUTION OF EDUCATIONAL AND GENERAL INCOME OF TWO-YEAR PUBLIC COLLEGES FROM EACH OF NINE SOURCES, FISCAL YEAR 1964-1965

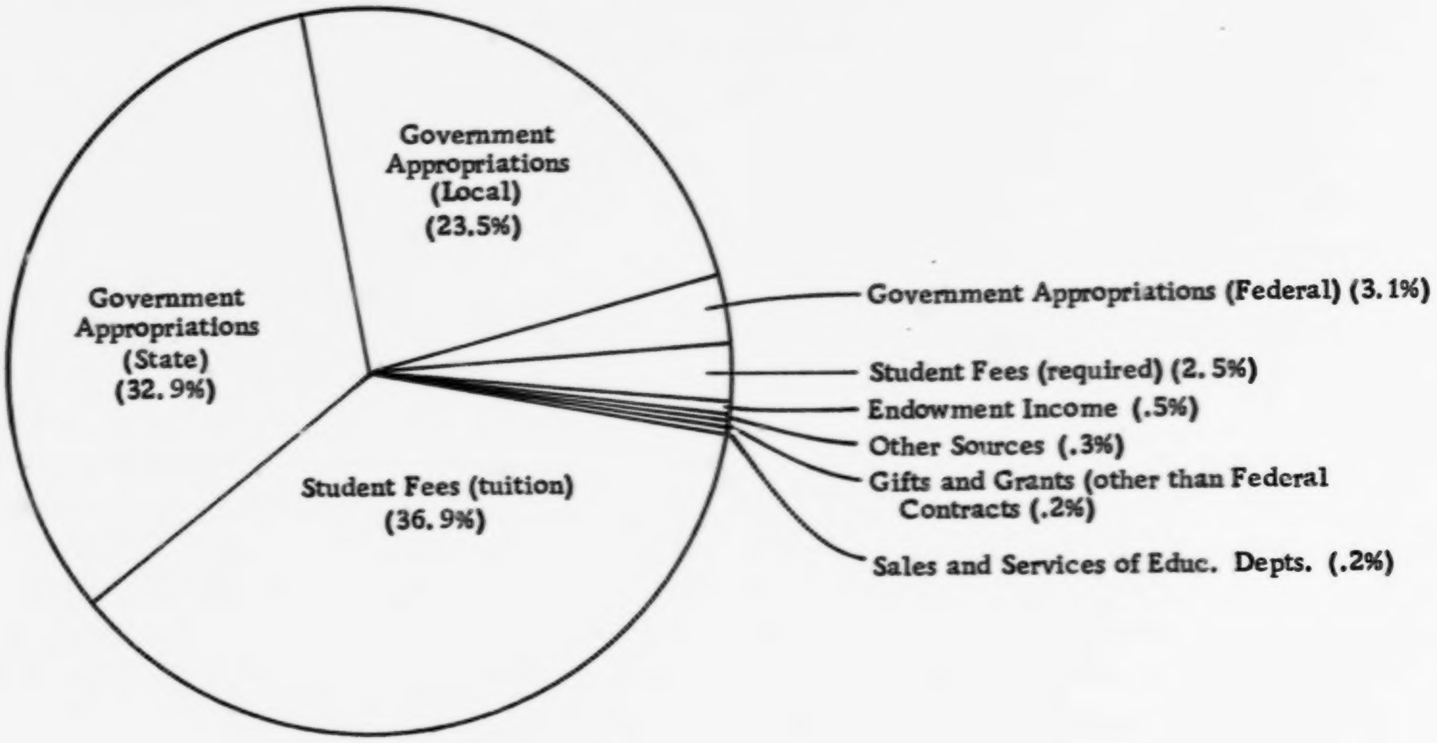


Figure 7
DISTRIBUTION OF EDUCATIONAL AND GENERAL INCOME OF FOUR-YEAR PUBLIC COLLEGES FROM EACH OF NINE SOURCES
FISCAL YEAR 1964-1965

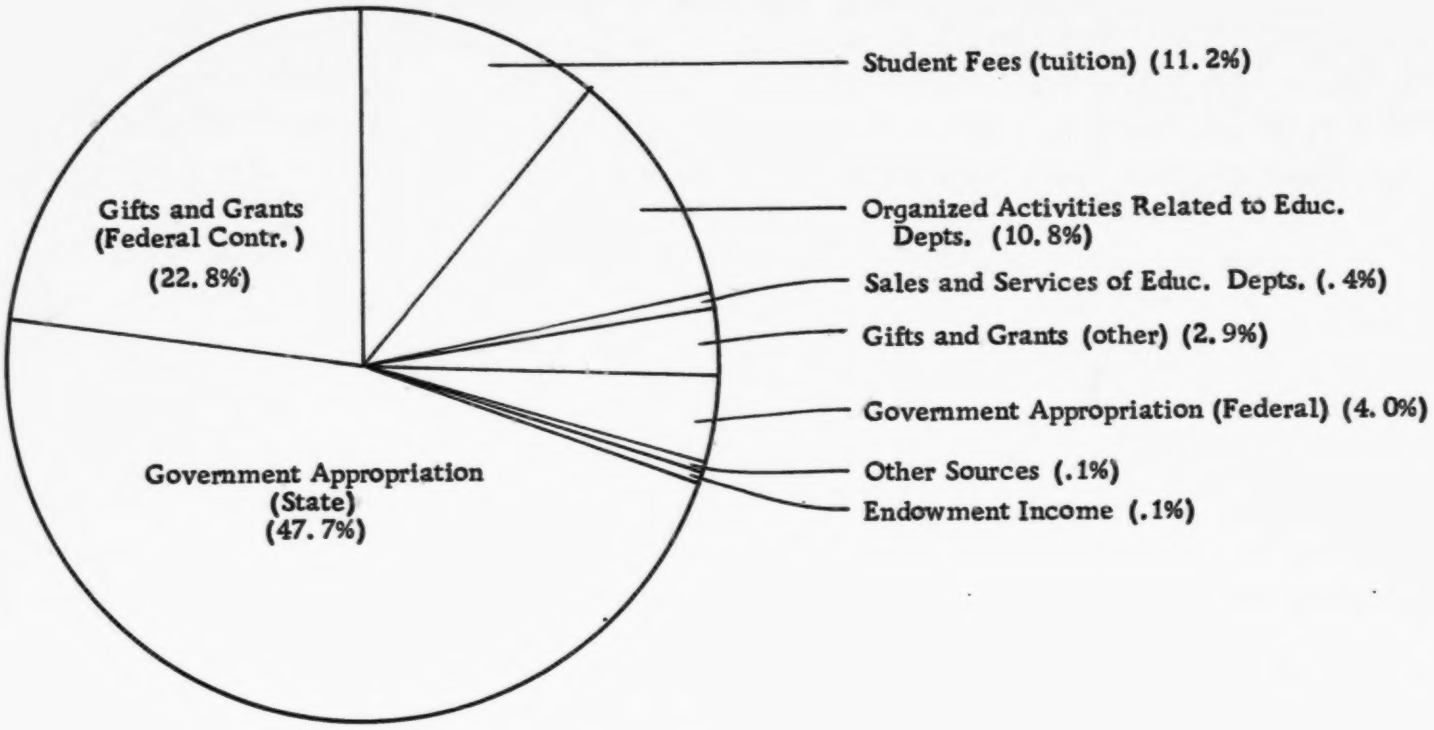
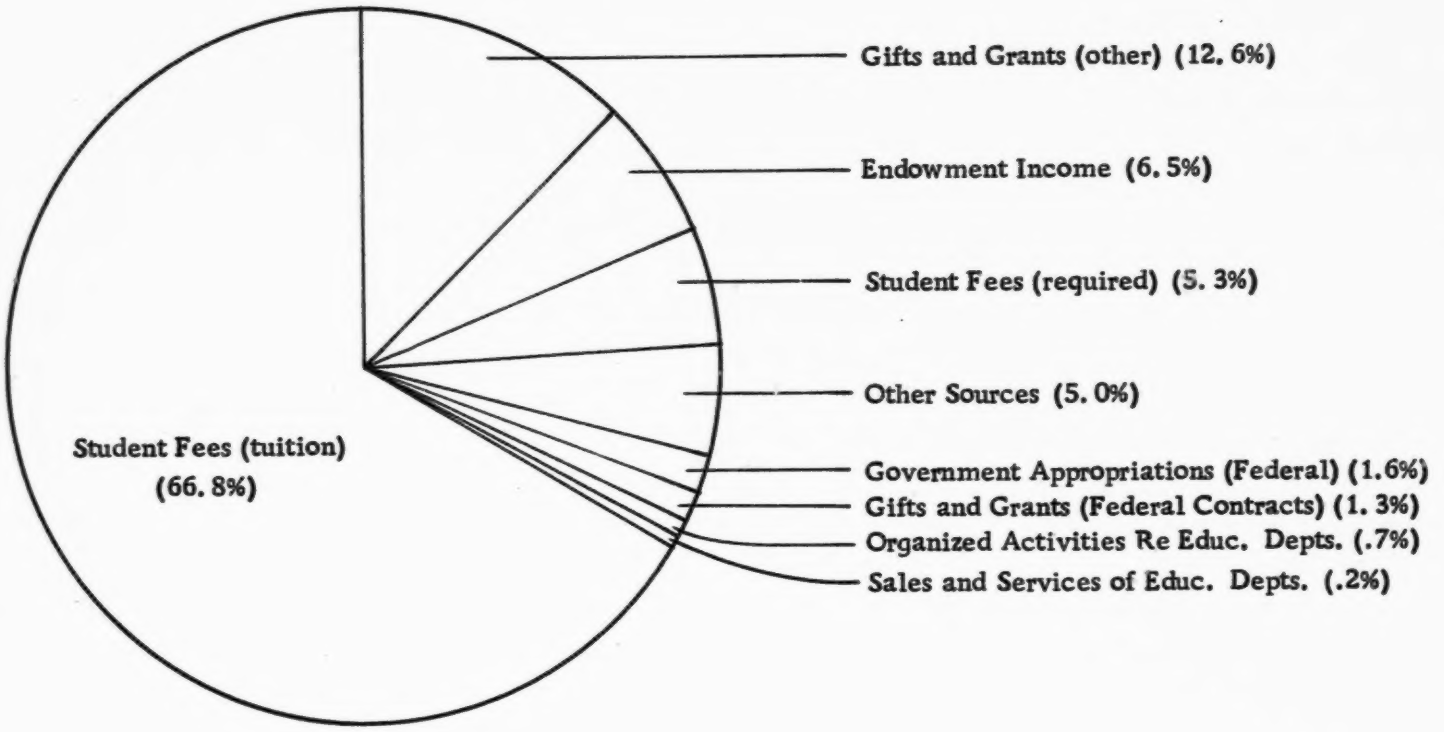


Figure 8
DISTRIBUTION OF EDUCATIONAL AND GENERAL INCOME OF FOUR-YEAR PRIVATE COLLEGES FROM EACH OF NINE SOURCES
FISCAL YEAR 1964-1965



Endowment income, usually considered an important income source for private colleges, furnished only 6.5 per cent of the income of Iowa private colleges, while gifts and grants provided private two-year colleges with 14.3 per cent of their income and private four-year colleges with 13.9 per cent of their income.

The distribution of educational and general income for each of the four types of institutions is shown separately in Figures 5 to 8, inclusive.

Data regarding the per cent of educational and general income of public and private two-year and four-year institutions in the nation are presented in Table V.

Private two-year colleges were found to differ appreciably (more than 3 per cent) from the national figures in regard to income from student fees (77.8 per cent compared to 61.8 per cent), endowment (.7 per cent compared to 4.7 per cent), and gifts and grants (14.3 per cent compared to 28.1 per cent).

Community colleges in Iowa compared with the national averages in all but two categories. Differences were noted in regard to a greater reliance on student fees (39.4 per cent compared to 11.0 per cent), and a considerably smaller reliance on income from state and local appropriations (85.0 per cent compared to 56.4 per cent).

Regents institutions were similar to their national counterparts in four areas of financial support: student fees, state government appropriations, endowment, sales and services, and other income. They differed appreciably in regard to federal government appropriations (4.0 per cent compared to 24.4 per cent), gifts and grants (25.7 per cent compared to 4.2 per cent) and income from related activities (10.8 per cent compared to 6.0 per cent). However, the first two categories, when combined, indicate similar patterns of federal support.

Private four-year colleges, in comparison with the national averages, were similar in four of the seven categories of educational and general income. Exceptions were noted in student fees (72.1 per cent compared to 62.9 per cent), endowment (6.5 per cent compared to 9.8 per cent), and gifts and grants (13.9 per cent compared to 19.6 per cent).

Conclusions and Implications

As measured by the amount of monies expended and income received, post high school education in Iowa is "big business." The 167 million dollars expended in 1964-65 for operating expenditures and physical plant additions in the thirty-eight reporting institutions represented one of the largest single areas of activity in the public sector. This consideration alone makes a continuous study of the financial resources and operations of post high school institutions imperative.

Certain other conclusions may be drawn from an analysis of the expenditures and income patterns of institutions of higher education in the State of Iowa.

TABLE V

PER CENT OF EDUCATIONAL AND GENERAL INCOME DERIVED FROM SOURCES OF INCOME FOR AGGREGATE U.S., 1959-60, BY TYPE OF INCOME AND BY TYPE OF COLLEGE

Type of Income	Private Two-Year		Public Two-Year		Public Universities		Private Four-Year		Total	
	U.S.	Iowa	U.S.	Iowa	U.S.	Iowa	U.S.	Iowa	U.S.	Iowa
Tuition and Fees	61.8	77.8	11.0	39.4	11.3	11.2	62.9	72.1	24.7	25.4
Government Appropriations										
Federal	1.9		1.8	3.1	24.4	4.0	3.3	1.6	22.2	3.4
State	0.1		32.0	32.9	48.1	47.4	0.5		29.5	36.7
Local	0.2		53.0	23.5	1.4		0.2		3.2	0.5
Endowment	4.7	0.7	0.2	0.5	1.0	0.1	9.8	6.5	4.4	1.5
Private Gifts and Grants	28.1	14.3	0.4	0.2	4.2	25.7	19.6	13.9	8.1	22.9
Related Activities	0.6	3.4	0.4		6.0	10.8	1.4	0.7	5.2	8.3
Sales and Services	0.6	3.0	0.1	0.2	1.8	0.4	0.2	0.2	1.0	0.3
Other	2.0	1.0	1.0	0.3	1.7	0.1	2.1	5.0	1.9	1.1

Source: F. H. Lindsay, Financial Statistics of Institutions of Higher Education, U.S. Office of Education (Washington: U.S. Government Printing Office, 1964).

Private Institutions

The heavy reliance on student tuition and fees for educational and general income places a severe financial restriction on Iowa's private colleges. To what extent increased efforts to enlarge income from other sources, notably endowment income and private gifts and grants, will alleviate the problem is not known. Nonetheless, a serious question remains as to the extent the state can reasonably expect its private four-year colleges to help accommodate the anticipated enrollment increase in the decade ahead. Clearly, if these institutions are to make a significant contribution to the "enrollment problem," additional financial resources must be made available.

The commitment of Iowa's private four-year colleges to excellence in their educational programs in spite of serious financial restrictions is to be recognized. Their record in this regard stands as concrete evidence of a resolute commitment to high educational standards. But, the fact stands that because of the heavy reliance on student fees for operation, private colleges are extremely sensitive to economic upswings and downswings as well as enrollment.

Community Colleges

The heavy reliance of public two-year colleges in Iowa in 1964-65 upon educational and general income derived from student fees would indicate a failure to approach the generally recognized and accepted goal that these institutions become "the people's college." There is a need for increased governmental support for these schools under the new organization.

The substantial changes that will take place as the new area community colleges and vocational-technical schools become operative will make most of the data collected for institutions in this category of historical interest only.

Regents Institutions

Iowa's public four-year colleges compare favorably with other public universities in the nation with regard to the percentage of income received from the areas of student tuition and fees and state government appropriations.

As was true of the other three types of institutions, Iowa's public four-year institutions compared favorably with their national counterparts with regard to the percentage of expenditures for the all-important categories of instruction and departmental research, and library programs. This same pattern was true of expenditures for organized research, an activity closely associated with public four-year colleges and public universities generally.

It would appear that on the basis of a comparison of one year's expenditures, other public four-year colleges in the nation feel a somewhat greater commitment to extension programs than is true of Iowa's institutions.

CHAPTER XI

PROJECTIONS OF COSTS FOR EDUCATIONAL AND GENERAL OPERATIONS

Expenditures in institutions of higher education are generally classified into two major categories, educational and general operation, and capital improvements.[1]

Projections of financial needs for educational and general operation are valuable for purposes of determining the long-range requirements of post high school institutions in the state and for determining planning guides that will be appropriate for meeting needs as they arise on a year-to-year basis. While long-range projections involve a number of assumptions, all or many of which may prove to be partially or completely non-applicable after a lapse of a period of time, the development of long-range needs is nonetheless appropriate and necessary.

Two-Year Institutions

A number of assumptions were made to project the financial needs for educational and general operation at the state's public and private two-year institutions. Chief among these were the following:

1. That the enrollment projections (Chapter V) would prove to be reasonably accurate.
2. That expenditures for educational and general operation would average approximately 900 dollars per student in 1970 in both public and private two-year institutions.
3. That the 900 dollars per student expenditure rate in 1970 would increase at the rate of 3.5 per cent annually for the period 1970 through 1980.
4. That an average of $7,000,000 dollars a year would be required to develop and maintain specialized vocational-technical programs and vastly broader adult education programs in the new area community colleges and vocational schools.

Projected Financial Needs

The projected financial needs for educational and general operation at public and private two-year institutions for the years 1970, 1975, and 1980 are shown in Tables I and II. If the foregoing assumptions are valid, the total requirements for two-year institutions will be approximately twenty-nine million dollars in 1970; forty-seven million in 1975; and, sixty-five million in 1980.

Iowa's public two-year institutions, for which phenomenal growth is projected, will require the greatest proportion of the projected budget; approximately twenty-six million dollars in 1970, forty-three million in 1975, and sixty million in 1980. Included in the projected financial needs of the public two-year institutions is seven million dollars for the development of specialized vocational-technical programs, including adult retraining programs and greatly expanded adult education programs of all kinds.

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[1] Projections of financial needs for capital improvements are found in Chapter IX.

TABLE I

PROJECTED FINANCIAL NEEDS FOR EDUCATIONAL AND GENERAL OPERATION AT TWO-YEAR INSTITUTIONS
1970, 1975, and 1980

Institutions	1964-65	1970-71	1975-76	1980-81
Public Two-Year	$2,622,000	$26,170,000	$43,414,000	$60,552,000
Private Two-Year	577,000	3,060,000	3,852,000	4,949,000
Total	$3,199,000	$29,230,000	$47,262,000	$65,501,000

TABLE II

COMPUTATION OF FINANCIAL NEEDS FOR EDUCATIONAL AND GENERAL OPERATION AT TWO-YEAR INSTITUTIONS
1970, 1975, and 1980

Year	Public	Private
1. 1970-71		
a. Estimated cost per student per year	$ 900	$ 900 x
b. Projected enrollment	21,300	3,400 =
c. Estimated cost of vocational-technical programs and adult education	$ 7,000,000	
d. Total financial needs	$26,170,000	$3,060,000
2. 1975-76		
a. Estimated cost per student per year	$ 900	$ 900 x
b. 3.5 per cent compounded annual increase in cost per student per year	$(1.035)^5$	$(1.035)^5$ x
c. Projected enrollment	34,000	3,600 =
d. Estimated cost of vocational-technical programs and adult education	$ 7,000,000	
e. Total financial needs	$42,414,000	$3,852,000
3. 1980-81		
a. Estimated cost per student per year	$ 900	$ 900 x
b. 3.5 per cent compounded annual increase in cost per student per year	$(1.035)^{10}$	$(1.035)^{10}$ x
c. Projected enrollment	42,200	3,900 =
d. Estimated cost of vocational-technical programs and adult education		
e. Total financial needs	$60,552,000	$4,949,000

Four-Year Institutions

Chief among the assumptions made to project the financial needs for educational and general operating purposes at public and private four-year institutions were:

1. That the enrollment projections (Chapter V) would prove to be reasonably accurate.

2. That the base year of 1965-65 was a "typical" year with regard to the distribution of expenditures "related to instruction." (This term is used to identify expenditures which are assumed to be directly related to instruction. It is arrived at by subtracting from the total budget, expenditures for Extension and Public Services, Organized Activities, and Organized Research.)

3. That the several components of the educational programs of four-year institutions will change in the years ahead, but that these changes will not significantly alter the proportion of total expenditures which are defined as those "related to instruction."

4. That the student "mix" in 1965-65 (i.e., ratio of undergraduate students to graduate students) will remain essentially the same in the period under study.

5. That the several assumptions used in the construction of the formulas utilized for projecting educational and general operation expenditures will prove to be reasonably valid. The reader is referred to Tables III, IV, and V for an identification of these assumptions.

Projected Financial Needs

The projected financial needs for educational and general operation for the years 1970, 1975, and 1980 at public and private four-year institutions are presented in Table III. The computation of these projections are shown in Table IV (public) and Table V (private).

As indicated in Table III, the total expenditures for educational and general operation will increase substantially from 1964 to 1980. If the foregoing assumptions prove valid, the total requirements of public and private four-year institutions will be approximately 275 million dollars in 1970,404 million in 1975, and 576 million in 1980.

Expenditures "related to instruction," most heavily influenced by the number of students enrolled, will also increase substantially from the base year 1964 to 1980. These financial requirements, which were approximately 78 million dollars in 1964, are expected to increase to 165 million in 1970, 242 million in 1975, and 344 million, or nearly a 450 per cent increase in 1980.

Analysis of the projections reveals that both public and private institutions will experience approximately the same percentage increase by 1980 with regard to the total projected financial needs and those "related to instruction." It is important that this fact be noted as one considers the substantial amount of monies involved.

TABLE III

PROJECTED FINANCIAL NEEDS FOR EDUCATIONAL AND GENERAL OPERATION AT FOUR-YEAR INSTITUTIONS: 1970, 1975, and 1980

(In thousands of dollars)

	1964-65		1970-71		1975-76		1980-81	
Institution	Expenditures "Proportional to Enrollment"	Total Expend.	Expenditures "Proportional to Enrollment"	Total Expend.	Expenditures "Proportional to Enrollment"	Total Expend.	Expenditures "Proportional to Enrollment"	Total Expend.
Public Four-Year	$48,746	$100,971	$100,723	$208,643	$148,130	$306,832	$213,001	$441,203
Private Four-Year	29,192	30,013	64,142	66,548	93,864	97,386	131,437	136,368
Total	$77,938	$130,984	$164,865	$275,191	$241,994	$404,218	$344,438	$577,571

TABLE IV

COMPUTATION OF FINANCIAL NEEDS FOR EDUCATIONAL AND GENERAL OPERATION AT PUBLIC FOUR-YEAR INSTITUTIONS 1970, 1975, and 1980

1970-71

1. Total expenditures in 1964-65 $100,971,000

2. Estimated total expenditures "related to instruction" in 1964-65 (48.3%)* $ 48,746,000

*Total estimated expenditures minus expenditures for Extension and Public Services, Organized Activities, and Organized Research.

Total expenditures		$100,971,000
Less:		
Organized Activities (20.4%)	$20,620,000	
Extension and Public Service (8.1%)	$ 8,221,000	
Organized Research (not directly related to institution) (23.2%)	$23,384,000	$ 52,225,000
		$ 48,746,000

3. Projected financial needs for expenditures "related to instruction" in 1970-71 $100,723,000

$(.60)(.06) + (.20)\ (.04) + (.20)\ (.015) = (.047)$

4.7% annual increase compounded for six years $(1.047)^6 = 1.3173$

where:

.60 represents estimated proportion of expenditures devoted to salaries of faculty and professional staff
.06 represents estimated annual salary increase for faculty and professional staff
.20 represents estimated proportion of total expenditures devoted to salaries of other personnel
.04 represents estimated annual salary increase for other personnel
.20 represents estimated proportion of total expenditures for supplies, equipment and other expenditures
.015 represents estimated annual cost increase for expenditures other than salary

TABLE IV (Continued)

Formula

Compounded Annual Increase in Expenditure		Estimated Expenditures in 1964-65 Related to Instruction / Actual Enrollment 1964-65		Projected Enrollment in 1970-71		Projected Expenditure Related to Instruction
(1.3173)	X	$\frac{\$48,746,000}{32,450}$	X	50,900	=	$100,723,000

4. Total estimated expenditures for educational and general operation in 1970-71 **$208,634,000**

where:

48.3% of this estimate represents estimated expenditure "related to instruction" -- (100,723,000)
20.4% of this estimate represents estimated expenditures for Organized Activities -- (42,606,000)
8.1% of this estimate represents estimated expenditures for Extension and Public Service--(16,987,000)
23.2% of this estimate represents estimated expenditures for Organized Research--(48,318,000)

1975-76

1. Total expenditures in 1964-65 **$100,971,000**

2. Estimated total expenditures "related to instruction" in 1964-65 (48.3%) **$ 48,746,000**
   *Same computation as in 1970-71 projection

3. Projected financial needs for expenditures "related to instruction" in 1975-76*
   *Same computation as in 1970-71 projection **$148,130,000**

   4.7% annual increase compounded for eleven years $(1.047)^{11} = 1.6573$

$$(1.6573) \times \frac{\$48,746,000}{32,450} \times 59,500 = \$148,130,000$$

4. Total estimated expenditures for educational and general operation in 1975-76* **$306,832,000**

   *Same computation as in 1970-71 projection

1980-81

1. Total expenditures in 1964-65 **$100,971,000**

2. Estimated total expenditures "related to instruction" in 1964-65 (48.3% **$ 48,746,000**
   *Same computation as in 1970-71 projection

   4.7% annual increase compounded for sixteen years = $(1.047)^{16} = 2.0852$

$$(2.0852) \times \frac{\$48,746,000}{32,450} \times 68,000 = \$213,001,000$$

3. Projected financial needs for expenditures "related to Instruction" in 1980-81 **$213,001,000**
   *Same computation as in 1970-71 projection

4. Total estimated expenditures for educational and general operation in 1980-81 **$441,203,000**
   *Same computation as in 1970-71 projection

TABLE V

COMPUTATION OF FINANCIAL NEEDS FOR EDUCATIONAL AND GENERAL OPERATION AT PRIVATE FOUR-YEAR INSTITUTIONS 1970, 1975, and 1980

1970-71

1. Total expenditures in 1964-65 of 21 institutions reported in the study — $25,211,000

2. Estimated total expenditures of 25 institutions in the state in 1964-65* — $31,802,000

$$\frac{31,815}{25,221} \times \$25,211,000 = \$21,802,000$$

*Estimated with ratio of total enrollment 31,815 to enrollment of 25,221 at 21 reporting institutions

3. Estimated total expenditures "related to instruction" in 1964-65 (96.4%)* — $30,652,000

*Total estimated expenditures minus expenditures for Extension and Public Service, Organized Activities, and Organized Research

Total expenditures		$25,211,000
Less:		
Organized Activities (1.7%)	$431,000	
Extension & Public Service (1.0%)	$259,000	
Organized Research (0.9%)	$222,000	$ 912,000
		$24,299,000

$$\frac{31,815}{25,221} \times \$24,299,000 = \$30,652,000$$

4. Projected Financial needs for expenditure "related to instruction" — $64,142,000

$$(.60)\ (.08) + (.20)\ (.04) + (.20)\ (.015) = (.059)$$

5.9% annual increase compounded for six years $= (1.059)^6 = 1.4105$

where:

.60 represents estimated proportion of expenditures devoted to salaries of faculty and professional staff
.08 represents estimated annual salary increase for faculty and professional staff
.20 represents estimated Proportion of total expenditures devoted to salaries of other personnel
.04 represents estimated annual salary increase for other personnel
.20 represents estimated proportion of total expenditures for supplies, equipment and other expenditures
.015 represents estimated annual cost increase for expenditures other than salary

Formula

$$\text{Compounded Annual Increase in Expenditures} \times \frac{\text{Estimated Expenditures 1964-65 "related to instruction"}}{\text{Actual Enrollment 1964-65}} \times \text{Projected Enrollment in 1970-71} = \text{Projected Expenditures "related to instruction"}$$

$$(1.4105) \times \frac{\$30,652,000}{31,815} \times 47,200 = \$64,142,000$$

TABLE V (Continued)

5. Total estimated expenditures for educational and general operation in 1970-71 $66,548,000

where:

96.4% of this estimate represents estimated expenditures "related to instruction" ($64,142,000)
1.7% of this estimate represents estimated expenditures for Organized Activities ($1,137,000)
1.0% of this estimate represents estimated expenditures for Extension and Public Service ($683,000)
0.9% of this estimate represents estimated expenditures for Organized Research ($586,000)

1975-76

1. Total expenditures in 1965-65 of 21 institutions reported in the study $25,211,000

2. Estimated total expenditures of 25 institutions in the state in 1964-65* $31,802,000
   *Same computation as in 1970-71 projection

3. Estimated total expenditures "related to instruction" in 1964-65* $30,652,000
   *Same computation as in 1970-71 projection

4. Projected total expenditures "related to instruction" in 1975-76 (96.4%)* $93,864,000

$$(60)\ (.06) + (.20)\ (.04) + (.20)\ (.015) = (.047)$$

5.9% annual increase compounded for six years (1964-1970) followed by
4.7% annual increase for five years (1970 to 1975).

$$(1.059)^6\ (1.047)^5 = 1.7746$$

Same computation as in 1970-71 projection except annual salary increase for faculty and staff indicated as 6% rather than 8% for the 1970 to 1975 period

Formula:

$$(1.7746) \times \frac{\$30,652,000}{31,815} \times 54,900 = \$93,864,000$$

5. Total estimated expenditures for educational and general operation in 1975-76* $97,386,000

1980-81

1. Total expenditures in 1964-65 of 21 institutions reported in the study $25,211,000

2. Estimated total expenditures of 25 institutions in the state in 1964-65* $31,802,000
   *Same computation as in 1970-71 projection

3. Estimated total expenditures "related to instruction" in 1964-65* $30,652,000
   *Same computation as in 1970-71 projection

4. Projected total expenditures "related to instruction" in 1980-81* $131,437,000
   *Same computation as in 1970-71 projection

5.9% annual increase compounded for six years (1964 to 1970) followed by
4.7% annual increase for ten years (1970 to 1980).

$$(1.059)^6\ (1.047)^{10} = 2.2328$$

$$(2.2328) \times \frac{\$30,652,000}{31,815} \times 61,100 = \$131,437,000$$

5. Total estimated expenditures for educational and general operation in 1980-81* $136,368,000
   *Same computation as in 1970-71 projection

Conclusions and Implications

Certain conclusions and implications are clear as a result of the foregoing projections of financial needs for educational and general operation at Iowa's public and private post high school institutions.

First and most important, it is patently clear that a sizable investment must be made in both the public and private sector if Iowa's post high school institutions are to meet the financial burdens placed upon them by increased enrollments and if they are to maintain, indeed improve, the quality of their educational programs.

Private Institutions

Private institutions face a major problem in financing. By 1970-71 they must double their 1964-65 income for educational and general operations, triple them by 1975-76, and quadruple them by 1980-81. Such increases are essential to maintain quality programs.

The major proportion of income for Iowa's private institutions comes from student fees (78 per cent in private two-year and 72 per cent in private four-year institutions) and, as a proportion of income, exceeds the national averages for similar institutions. Although a heavy reliance upon student fees will no doubt be continued in the future, a significant increase in the student fees themselves would undoubtedly price private colleges beyond the ability of many to pay.

Private gifts and grants, the second largest and significant source of income to private colleges, accounts for only 14 per cent of the total income. Philanthropy may be expected to increase, but is likely that it will decline relatively to rising costs, unless private donors in increased numbers substantially increase their support of private education in Iowa.

If student fees are to remain within the ability of most students to pay, state and federal monies, in some manner, will undoubtedly be necessary to maintain private education as an alternative in Iowa post high school education.

Community College

Securing the financial resources needed to provide a quality educational program for the large number of students who are projected to enroll will be a major problem for the community colleges.

The existing sources of educational and general operating revenue in the community colleges are essentially the following: state appropriations (33 per cent), student tuition and fees (39 per cent), local taxation (24 per cent), and, federal appropriations (3 per cent).

In an attempt to determine the adequacy of the above financial structure to generate income for educational and general operations, a projection of income using these sources was made and is shown in Table VI. Examination of the projection indicates that the existing financial base is substantially inadequate even in 1970.

The above generalization regarding the adequacy of the existing structure to meet short-range needs is based on the assumption that state appropriations ($2.25 per student in average daily attendance), student tuition ($200 per student per year), local taxes (three-fourths of a mill), and property values remain constant, and that federal appropriations will be approximately five million dollars in 1970, 1975, and 1980. (This figure may be too liberal, although there is an equal probability that it may be too conservative.)

Whatever the case, it is the projected sources of educational and general operation revenue that is in need of close study. As indicated in the projection, public two-year institutions will be in need of additional millions of dollars to operate their programs.

TABLE VI

PROJECTED MAJOR SOURCES OF EDUCATIONAL AND GENERAL OPERATION REVENUE AND PROJECTED EXPENDITURES OF PUBLIC TWO-YEAR INSTITUTIONS 1970, 1975, and 1980

Source of Revenue	1970-71	1975-76	1980-81
1. State Appropriations $2.25 per student x 180 days x projected enrollment	$ 8,627,000	$13,770,000	$17,091,000
2. Student Fees $200 per student per year x projected enrollment	$ 4,260,000	$ 6,800,000	$ 8,440,000
3. Local Tax three-fourths of one mill using 1965-66 assessment data	$ 5,000,000	$ 5,000,000	$ 5,000,000
4. Federal Appropriations estimated at 5 million dollars annually	$ 5,000,000	$ 5,000,000	$ 5,000,000
TOTAL ESTIMATED REVENUE CAPACITY	$22,887,000	$30,570,000	$35,531,000
TOTAL ESTIMATED EXPENDITURE NEEDS	$26,170,000	$43,414,000	$60,522,000
DIFFERENCE IN CAPACITY AND NEEDS	$ 3,283,000	$12,844,000	$24,991,000

It is apparent that substantial increases will need to be made in the existing components of the financial structure of public two-year institutions. Hopefully, the necessary increase in support will come from state and federal appropriations and not student fees.

Student fees must remain low if the community college is to be economically available to large numbers.

Nor can local taxes be expected to provide a proportionately larger part of the income. Property taxes are already overworked and, in areas of low assessed evaluations, can not now generate sufficient monies, let alone what will be needed in the future.

Regents Institutions

As was true of the other institutions, the Regents institutions are faced with an accelerated need for financial resources for educational and general operating expenditures. The projected expenditures "related to instruction" (the proportion of the Regents programs paid for primarily by state funds) will approximately double from 1964-65, triple to 1970, and continue to increase four times over by 1980. Total expenditures will increase in the same proportions, to $441, 000, 000 in 1980.

The major existing sources of revenue for public four-year institutions will more than likely continue to provide the broad financial base for these institutions in the future. During 1964-65, state appropriations accounted for about 48 per cent of educational and general operation revenues, gifts and grants (largely in the form of federal grants) and other federal appropriations accounted for an additional 27 per cent, student fees 11 per cent, and income from other sources 14 per cent. If it is correctly assumed that these sources will increase in the same proportion between now and 1980, then state appropriations in 1980 will need to be increased four times to 212 million dollars in order to maintain the approximate 48 per cent level of support. All that can be safely assumed at this time regarding the future role of the federal government is that it will continue to increase its activity in higher education (barring major world conflict or recession).

If student fees were to remain at the same proportion of income in 1980, they would need to increase to $48, 500, 000 or about $700 per academic year per student; perhaps too much to keep the doors open to many qualified students.

Where Will the Money Come From?

Providing the money to finance post high school education in its necessary diversity and quality will be a major task, calling for the support of all Iowans, both as donors and as taxpayers. Although there is every indication that the necessary fiscal resources will be available in Iowa, there must still be the commitment to use the available resources for this purpose.

Monies from outside sources, foundations, individual donors, and the federal government might be expected to increase in the future, but the nature of such support is usually in the form of aid to specific projects and often requires "matching" money from the institution. Such support, then, while vital and important, and worthy of pursuit, calls for additional financing rather than the need for less.

Monies from student tuition and fees, while expected to increase in amounts with increases in enrollments, should not be expected to produce a larger share of the total income. Post high school education must be an economic possibility for all qualified students, necessitating reasonable student costs in both public and private two-year and four-year institutions.

The state's share in post high school educational financing can only be expected to increase. Direct aid to the Regents institutions and area community colleges will have to increase to continue the development and expansion of both; indirect aid to the student through the state scholarship program and low student costs in public institutions will increase the state's contribution to post high school education; property tax relief and area equalization will require an increase in state support of area community colleges; and even indirect aid to the state's private institutions will have to be considered.

The extent to which the state chooses to support post high school education will be the major determinant in the future success and quality of post high school education, and, in large measure, Iowa itself.

Chapter XII

GOVERNANCE AND COORDINATION

Governance, "... the process of deciding and seeing to it that the decisions made are executed,"[1] is one of the most critical requirements for operating institutions and systems of higher education. It is through the governing function that the aims, goals, objectives, and purposes of the institution or system are created, defined, and implemented; this is where the final responsibility for the success or failure of the institution or system must reside.

Coordination is "... the act of regulating and combining so as to give harmonious results"[2] and is primarily designed to increase the effectiveness of groups of institutions and systems by a more efficient use and allocation of available resources through planning and cooperation.

Present Governance Patterns in Iowa

Private Colleges and Universities. Each of the Iowa Private Colleges has a governing board - usually called the board of trustees, but also referred to as a board of regents, board of directors, board of control, or the corporation. While most of the boards are predominantly lay in membership, many have a considerable number of clerical members, and six Catholic institutions have boards consisting solely of members of the sponsoring order. A few colleges have two boards, each with somewhat different functions and authority; one board is governing in nature, the second board usually being advisory in nature.

The influence of religious organizations in the history of the private colleges in Iowa is significant. Although four of the twenty-five private institutions indicate that they are independent of church affiliation, even these four trace their lineage to a church-oriented foundation, and continue to emphasize the development of Christian ideals as an institutional objective. Denominations represented by affiliated colleges in Iowa include: Catholic (8), Lutheran (4), Methodist (4), Presbyterian (3), Reformed Church in America (2), Evangelical United Brethern (1), Latter-Day Saints (1), Christian Reformed Church Midwest (1), and Quaker (1).

About one-fourth (26.8 per cent) of the board members of Iowa Protestant-related colleges are church officials; nearly two thirds (63 per cent) of the boards of Catholic colleges are members of religious orders. Regional and national church bodies also exercise some supervision, but it is believed the major governing responsibilities remain quite clearly with the local institution. The private colleges are Iowan in the sense of being located in Iowa, but, quite understandably they are not, as a group, as much oriented to Iowa as are the public institutions. The private institutions vary considerably in their responsibilities to areas beyond our boarders, such as dioceses, church conferences, etc. This is reflected in their student bodies and also in their boards. When all of the private colleges are considered together, 68.6 per cent of the board members are Iowans, and 31.4 per cent are from other states.

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[1] John J. Corson, Governance of Colleges and Universities (New York: McGraw-Hill Book Company, 1960).
[2] Lyman A. Guenny, Autonomy of Public Colleges (New York: McGraw-Hill Book Company, 1959).

The boards are called upon for differing responsibilities. Some lodge in the administrative officers almost complete control of the college and meet but once a year. Others meet more often and take a more active part in making fundamental policy decisions. It is probably unfair to draw any common picture of the work of private boards since they vary so greatly. Nevertheless, it is clear that each institution is virtually autonomous and responsible only to its own board.

Public Institutions - Regents. Iowa was one of the early states to place its four-year institutions under one board. Since 1909, The University of Iowa, Iowa State University, and State College of Iowa have been under the State Board of Regents so that both governance and coordination have been provided by one board. In addition to the three collegiate institutions, the Regents are also responsible for the Iowa Braille and Sight Saving School and the Iowa School for the Deaf.

The Board of Regents is composed of nine members appointed by the Governor with the consent of the Senate for terms of six years, three terms ending each two years. No more than five may be from one political party. The board maintains a professional central office staff of three who carry out for the board many financial and business matters in keeping with previously determined board policy.

The Regents determine all basic policy, both educational and fiscal, for the three state schools. They select a president for each and delegate the actual administration of the individual schools to them. The Regents constantly review the actions and development of each institution through their monthly meetings.

Public Institutions - Public Instruction. The State Board of Public Instruction is appointed by the Governor. Eight members must be chosen from nominations made by school boards' conventions within prescribed districts, and a ninth member is appointed at large. The State Board of Public Instruction appoints the State Superintendent of Schools who carries out the broad responsibilities of the board for the supervision of the elementary and secondary schools of the state. The State Board of Public Instruction also has the supervisory and regulatory responsibility for the junior colleges operated by single school districts (so long as they exist) and the new area vocational schools or area community colleges.

The junior colleges still operating under the old law are governed by local school boards. In the newer area schools, new boards, not associated with local school districts and not restricted by county lines, have been created to exercise immediate control of their own particular institution. In the old system the local superintendent is the principal administrative officer; in the newer system a superintendent of the area has been created as the principal administrative officer.

Policy-making is divided between the Board of Public Instruction and the local or area boards. The Board of Public Instruction makes the basic policy determinations, leaving to the local or area boards the determination of local policy and the means by which state and local plans are implemented.

By law the standards for the area community colleges are determined by the State Board of Public Instruction and State Board of Regents meeting jointly. The boards have gone beyond the letter of the law and jointly participated in determining standards for the vocational-technical schools in order that there be no lack of harmony in the development of the vocational-technical programs and the college transfer programs.

The area schools have a dual local-state control and a triple (local-state-student) financing program, supplemented by federal funds. It is clear that creation of the areas schools was intended to provide a state-wide system to serve the needs of the state as a whole, but also to permit the local area to determine, within prescribed limits, the special programs which it believes important to serve its area.

The State Board of Public Instruction exercises its control and supervision through several officials in various divisions of the Department of Public Instruction. Since the area community college-vocational school concept is so new in Iowa, the exact form which this supervision takes may be expected to change as experience is gained.

Future Possibilities for Governance

Private Colleges and Universities. This report does not recommend changes in the governance of any private school. It does suggest that each college examine its charter to see if the functions it believes itself obligated and able to perform are correctly stated.

Public Institutions - Regents. The report does not recommend any change in the present governance pattern for the three state schools. It is good that the Regents are currently examining the scope, functions, and responsibilities of each of the institutions with a view to up-dating these statements and to securing any additional legislative corrections necessary.

Public Institutions - Community Colleges. Although there are other means of providing state governance for an area system, it seems clear that time should be granted to the present system to permit it to prove itself. The operation is too new to suggest that the present arrangement will not work effectively; the fact that other states may be following completely different patterns does not necessarily mean that their approach would be better for Iowa. It is suggested that the department should give a prominent place in its organization to the person or persons responsible for supervising the area schools, and preferably have the key person report directly to the state superintendent.

Coordination Patterns

Private Colleges and Universities. Twenty-six private institutions are members of the Iowa Association of Private Colleges and Universities and contribute to its support. The association is designed to draw the private colleges closer together for communication of mutual interest, to act as the voice of private education before the general public and the General Assembly, and as a means for attacking problems which may have common or cooperative solutions.

The Iowa College Foundation is an association of private colleges and universities with the purpose of common fund-raising. The foundation solicits contributions for all member colleges and then prorates the gifts among the institutions, or as directed by the donor.

A number of Iowa colleges are involved in cooperative efforts with colleges in other states, namely the Central States College Association which includes Luther Simpson, the Associated Colleges of the Midwest which include Coe, Cornell, and Grinnell.

Public Institutions - Regents. The Board of Regents is in itself a coordinating agency for the three state institutions. There are a number of inter-institutional committees with formal status and prescribed functions. These include the Inter-institutional Committee on Education Coordination, The Business Managers Committee, the Registrar's Committee, the Committee on Library Coordination, the Public Relations Committee, the Regents Committee on Educational Relations, and the State Extension Council. There are also six committees dealing with vocational-technical responsibilities and many ad hoc committees appointed from time to time to plan or work to attain common objectives. There have been joint meetings of the three graduate councils, the three athletic boards, and many meetings between staffs in particular disciplines.

In spite of all this obvious effort to work together, there is a rivalry and pride in the individual institutions. Worry over duplication of courses is no longer the great concern that it was in previous studies sponsored by the Regents; because of institutional size, duplication in most areas is not inefficient. Nevertheless, there are agreements and policies of the Regents which limit duplication in highly specialized fields or in those which have small enrollments due to limited needs or demands of the state, or where costs are extremely great. It is possible that the Regents institutions have not gone as far as might be possible with cooperative instructional programs, although a number exist in a very informal pattern.

Public Institutions - Department of Public Instruction. The Board of Public Instruction also has a built-in coordinating function between the area community colleges and area vocational schools. This whole program is too new for the development of inter-institutional cooperation to have taken place as it has in the Regents institutions, but the potential is present. It is hoped that a full utilization of this potential will be achieved in the future.

In the past there has been an Association of Junior Colleges and an Association of Iowa Public Junior Colleges. Both have been quite effective for exchanging ideas and as vehicles for presenting to the public and the General Assembly their problems and aspirations. The future of these organizations is problematical, as it is possible they may find a new and stronger voice under the area concept.

Public and Private. In the 1950's an effort was made to conduct studies of higher education needs through the cooperation of public and private colleges, but it came to little because of a lack of financial support. This present study is proof, however, of the fact that voluntary cooperation is possible in Iowa.

The Iowa College Presidents Association has been a vehicle for exchanging ideas but has not served to set up cooperative programs or provide coordination.

During the summer of 1966, the Regents created the Regent's committee on Educational Coordination. It was a sub-committee charged specifically with the task of providing assistance to, and working with, private colleges. It is to make available Regents facilities and staff to assist in the development of private college programs and to aid in programs in which federal funds may be available for developing institutions. It also has a sub-committee working with the new community colleges and area vocational schools to make available Regents facilities and staff for the development of programs and for promoting cooperation in any form which seems feasible. The work of this committee appears to offer considerable potential for cooperation; it is not in any sense designed to serve a general coordinating function. Furthermore, it is not a policy-making group, although it may recommend policies to other agencies.

Mention was made of private college cooperation beyond the borders of the state. In like manner the state institutions are involved in such efforts and in some cases private institutions are involved. Among others these include the Committee on Institutional Cooperation on the Big Ten Universities and the University of Chicago, which involves The University of Iowa; the State Universities of Mid-America, which involves both The University of Iowa and Iowa State University; the Central States Colleges and Universities and the Central States Universities, Inc., both of which include State College of Iowa.

It does not seem worthwhile to consider further possibilities for coordination within a single segment of Iowa post-high school education -- the matter of significance is to be found in considering the state as a whole. It has been pointed out that serious efforts at cooperation already exist in some areas, and others are likely to develop or are in the process of becoming reality. There is, however, no real source of institution-wide cooperation on a permanent basis which would follow the work of this study committee. The arrangement which permitted this study ceases when the study is completed.

Before discussing possibilities of coordination, reference should be made to a state agency which operates no institutions but which is involved with all types of post high school education. This is the Higher Education Facilities Commission, created by the Iowa General Assembly. Members are appointed by the Governor and must have representation from the Regents, the Board of Public Instruction, the private colleges, and the general citizenry. It has two functions: 1) to provide for the distribution of federal funds for buildings, and 2) to administer the state scholarship program. It has a small office staff with a professional director. It is not a coordinating agency as such, but its work does have an inter-institutional flavor. Since the scholarship function was added to this board, it is possible the General Assembly should consider renaming this agency.

In suggesting future coordination, it should be remembered that previously in this chapter it was indicated that no recommendation is being made to change the governance pattern in Iowa. This decision therefore eliminates the alternatives of a separate state board for community colleges, or of placing all public higher education under the Regents. If either of these alternates were feasible, it would still not materially improve the coordination with the private colleges.

In the remainder of this chapter three arrangements for achieving statewide coordination of post-high school education are presented, and one is recommended.

Alternative 1 - A Voluntary Coordinating Council. The existing boards and institutions could create a Voluntary Coordinating Council representing about equally all three segments of post high school education -- private, state, and area schools -- and made up about equally of professional staff and members of governing boards.

This Coordinating Council would be created by joint action of the Board of Regents, the Board of Public Instruction, and the Association of Iowa Private Colleges. It would be financed by funds contributed by the three agencies and their institutional members. In addition, it should have some representation from the Higher Educational Facilities Commission.

The Council would have two principal objectives: 1) to provide a means for the systematic gathering of data concerning post high school education and to make such data available in usable form to the colleges, their boards, and any other agency in need of such information; 2) to provide for a dialogue between all officials and agencies involved in post high school education, such that common problems might be considered, solutions found, cooperation aided -- hopefully improving the total program of the state.

The Council should meet at regularly stated intervals, and should prepare a biennial report to the institutions and governing boards of their activities, progress, and problems. It should plan meetings so that there can be presented to it the plans and legislative askings of public bodies, and the plans and aspirations of private colleges. In its reports it should summarize these plans and askings and be free to comment as to whether the total needs of the state are being adequately served, to indicate wherein the Council feels requests are valid or out of line, and to make suggestions which in its judgment might improve the total picture. These biennial reports should also be available to the Governor, members of the General Assembly, and interested citizens.

The Council might from time to time make recommendations directly to the Regents, to the Board of Public Instruction, or to one or more private colleges. It would be expected that such governing bodies would consider such recommendations and reply, indicating action, agreement, or disagreement. This material would also appear in the report as an indication of progress or lack of it.

The Council should either provide for a central office or arrange for an existing agency or school to systematically gather data concerning post high school education. It should, from time to time, issue new projections on enrollment, program needs, costs, and other factual data.

Alternate 2 - A Mandatory Coordinating Agency. The legislature could create a coordinating agency and provide for its support. It would probably be made up heavily of citizens who are not members of governing boards or staff of institutions of higher education. It should, however, include members chosen to represent the three main segments of post high school education and should represent both staff and members of governing boards.

This coordinating agency would meet at regular intervals, collect and assemble data relating to post high school education, make forecasts of enrollment and financial needs, make recommendations to the Governor and General Assembly concerning the merits of requests for appropriations, new or modified legislation, and any matters which were felt appropriate. Such reports would also be available to the institutions and the governing boards.

In order that such reports might be prepared, opportunity would need be given for the presentation of legislative askings of the Regents and the Board of Public Instruction well before they are due in the Governor's office. They would also have to make provision for the presentation of general legislative programs by both public and private agencies.

This coordinating agency would have the authority to make recommendations to the Regents, the Board of Public Instruction, and to one or more private colleges concerning programs and functions and to receive replies to such recommendations, but should not have authority to dictate to any of these governing boards. Its function would be to coordinate, not to govern. It should be provided with staff to make the necessary analyses and reports.

Alternate 3 - A Statutory Board. The legislature could create a third state board to coordinate all of post high school education and provide for its financial support. This "super board" would be appointed by the Governor from citizens not members of any other governing board. It would receive recommendations concerning appropriations from the Regents and the Board of Public Instruction and make a single request for funds to the Governor and General Assembly. The Regents and the Board of Public Instruction might have the right to present supplementary statements in defense of items reduced or eliminated from the report by the "super board."

Such a board would set up its own office, develop a professional staff, and maintain its own records. It might be given authority to approve all new programs at public institutions, and the establishment of any new or branch institutions. It might further be given to grant charters to private colleges and to determine their scope and authority, particularly if any sizable public funds were to be made available to assist the operations of the private colleges.

This board would issue a biennial report to the Governor and General Assembly and provide advisory services to all institutions and governing boards and to the general public.

The Board of Directors of this study have given serious considerations to these three alternatives. It is their earnest belief that the seeds of cooperation already exist among the various segments of post high school education in Iowa to such an extent that mandatory coordination is not necessary and that it would be excessively expensive. They are convinced that Alternative 1 is both feasible and workable and should be implemented at once by the official boards of existing institutions. They believe it will, over a period of time, bring genuine working together of all segments in an atmosphere most conducive to success. It also believes it will give to the Governor and General Assembly more information than they have had in the past with which to make judgments as to the needs of Iowa.